

## ABSTRACT

Title of dissertation:       THE IMPORTANCE OF BEING A COMPLEMENT  
CED-EFFECTS REVISITED

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This dissertation revisits subject island effects (Ross 1967, Chomsky 1973) cross-linguistically. Controlled acceptability judgment studies in German, English, Japanese and Serbian show that extraction out of specifiers is consistently degraded compared to extraction out of complements, indicating that the Condition on Extraction domains (CED, Huang 1982) is still empirically viable, contrary to recent claims (Stepanov 2007). As a consequence, recent treatments of the CED in terms of Multiple Spell-Out (Uriagereka 1999) are still tenable. First, a series of NP-subextraction experiments in German using *was für*-split is discussed. The results indicate that subject island effects cannot be reduced to freezing effects (Wexler & Culicover 1981). Extraction out of in-situ subjects is degraded compared to extraction out of in-situ objects. Freezing incurs an additional cost, i.e., extraction out of moved domains is degraded compared to in-situ domains. Further results from German indicate that extraction out of in-situ unaccusative and passive subjects is *en par* with extraction out of objects, while extraction out of in-situ transitive and intransitive unergative subjects causes a decrease in acceptability. Additionally,

extraction out of indirect objects is degraded compared to extraction out of direct objects. It is also observed that a second gap improves the acceptability of otherwise illicit *was für*-split, a phenomenon dubbed Across-the-Board (ATB)-*was für*-split and analysed in terms of Sideward Movement (Hornstein & Nunes 2002). Furthermore, wh-extraction out of non-finite sentential arguments also shows a significant subject/object asymmetry. Experiments in English indicate that NP-subextraction yields the familiar subject/object asymmetry, while the contrast largely disappears when PPs are fronted. Further results show that ECM and passive predicates do not improve the acceptability of the extraction out of subjects. Finally, subject subextraction patterns in Japanese and Serbian are investigated. Both Long-distance scrambling and clefting out of sentential subjects in Japanese leads to a stronger degradation than out of sentential objects. PP-extraction in Serbian also shows the same subject/object asymmetry, while no such contrast is found for Left Branch Extraction.

THE IMPORTANCE OF BEING A COMPLEMENT  
CED-EFFECTS REVISITED

by

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## Dedication

Ich widme diese Arbeit meiner Oma Herta Andrysek.

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*Wir fühlen, dass, selbst wenn alle möglichen wissenschaftlichen Fragen  
beantwortet sind, unsere Lebensprobleme noch gar nicht berührt sind. Freilich  
bleibt dann eben keine Frage mehr; und eben dies ist die Antwort.*

— Ludwig Wittgenstein, Tractatus Logico-Philosophicus, 6.52 —

# Chapter 1

## Introduction

Wh-extraction is one of the most intriguing and most widely studied phenomena in theoretical linguistics. In a language like English, a wh-phrase surfaces in a different position from where it is interpreted:

- (1) a. Mary kissed John.
- b. **Who<sub>i</sub>** did Mary kiss **e<sub>i</sub>**?

The dependency between the surface position of the wh-element and the position of interpretation, known as wh- or  $\bar{A}$ -dependency, can span over a potentially infinite distance:

- (2) **Who<sub>i</sub>** did Kim say that Bill thought that Tim believed that Ben kissed **e<sub>i</sub>** ?

There are certain configurations, however, that seem to interfere with the formation of a wh-dependency:

- (3) a. \***Who<sub>i</sub>** did a book about **e<sub>i</sub>** cause a scandal?
- b. \***What<sub>i</sub>** did you eat **e<sub>i</sub>** and fries?
- c. \***Which book** did you fall asleep after you read **e<sub>i</sub>**?

Configurations of this sort were dubbed islands by Ross (1967), who invokes the image of the wh-phrase being stranded in a position from which it cannot escape. This dissertation is about a specific subset of islands, namely subject islands of the sort exemplified in (3-a). We will approach this issue primarily from an empirical



point of view addressing the question of how robustly the generalization holds that subjects constitute islands cross-linguistically.

**Chapter 2** provides the background for the discussions to ensue. We will fast-forward through the history of subject islands. It all started, as it so often does, with Ross's (1967) dissertation. Ross formulated the Sentential Subject Constraint, according to which extraction out of NPs immediately dominated by S is disallowed. Chomsky (1973) extended these observations to a general Subject Condition, barring subextraction out of subjects across the board. Subsequently, Cattell (1976) and more famously Huang (1982) subsumed subject island effects under a general condition on extraction out of non-complements. This idea has become known as Huang's Condition on Extraction Domains (CED).

Over the years, unsparing efforts have been made to capture CED-effects. Two accounts deserve special mention. Government and Binding Theory has given us *Barriers* (Chomsky 1986), where CED-effects are incorporated into a general theory of locality. For Chomsky, the complement/non-complement asymmetry is ultimately a function of lexical marking or L-marking, which is roughly defined as being  $\theta$ -marked by a lexical head. Only complements are L-marked, and only complements are licit domains for extraction. The core minimalist proposal is due to Uriagereka (1999), who derives CED-effects from general constraints on the structure building mechanism.

So far so good. Ever since Ross's dissertation, however, apparent counterexamples to the subject condition and consequently to the CED from various languages have been floating around. Stepanov (2001, 2007) has collected some of these cases and proposes that subjects are not islands in general, but that the ungrammaticality of many examples is the result of freezing effects (cf. Wexler & Culicover 1981, Takahashi 1994). In other words, nothing is wrong with extracting out of subjects *per se* but subjects become opaque domains as a result of being moved. Languages

that allow for subjects to stay in-situ, so Stepanov’s argument continues, therefore allow extraction out of subjects. Stepanov’s line of reasoning seems compelling, and if he is right about the data, this would be rather dire news for the above mentioned theories that try to derive subject island effects independent of freezing effects.

It seems to be the case in science generally that a theory is only as good as the data it is built on, while, conversely, the data we discover is only as good as the theoretical assumptions we hold when looking for it. The situation is no different with syntactic islands. While much insightful theoretical work has been done on islands and the CED, the status of the empirical facts the theories are based on is often highly controversial. Key data points used by Stepanov to build his argument are of this sort.

In this thesis, we revisit many of the apparent counterexamples to the CED and employ more-fine grained methods of data collection. Concretely, we conducted a series of 7-point scale acceptability judgment studies in German, English, Japanese and Serbian, following a much more rigid methodological standard. *These studies quite uniformly converge on the conclusion that CED effects indeed exist* but that a violation of the CED does not always lead to categorical ungrammaticality.

The need for experimental data collection is emphasized in areas where key data points are controversial. We will revisit such notions as *grammaticality*, *acceptability* and *gradience* in the grammar. Furthermore, we will discuss potential sources of disagreement on judgments and how they can be reconciled. We will also outline the methodology all of the studies discussed in this dissertation follow.

**Chapter 3** focuses on NP-subextraction in German, employing the *was-für* split construction as a diagnostic to investigate what the extraction domains in German are. The overarching question is whether German shows subject/object asymmetries that are independent of freezing effects. We will first provide background on the notion of subject and subject position in German, concluding that

German has four positions where subjects can appear in overt syntax: a topic position in CP, a derived subject position in TP, an external subject position in Spec *v*P and an internal subject position as the complement of V. We will then summarize some of the theoretical work on subextraction in German, and will note a considerable amount of disagreement on the status of key examples.

Experiment 1 looks at the acceptability of subextraction along two dimensions: subjects vs. objects and in-situ vs. moved domains. The results indicate that there is a significant subject/object asymmetry for in-situ domains. In other words, there is a complement/non-complement asymmetry that is independent of freezing. Freezing, in turn, is a separate factor that incurs an additional decrease in acceptability. Extraction out of moved subjects and objects is worse than out of their in-situ counterparts. We conclude that German has two independent constraints on extraction: the CED and freezing. This pattern cannot be captured by a single theory but both a theory of the CED and of freezing effects is needed. In addition, we will comment on the relation between a grammatical constraint and the perceived acceptability of a sentence, addressing the issue of what it means for a sentence to violate the CED and still be marginally acceptable.

Experiment 2 focuses on passivized ditransitives, which have the interesting property that the subject linearly follows the indirect object in the unmarked word order. We will see that *was-für* split out of indirect objects is strongly degraded compared to extraction out of internal subjects. This will lead us into an interesting discussion on the structural properties of indirect objects in general. Additionally, we find that manipulating the word order does not affect the permeability of the domains. This suggests that an explanation of the acceptability patterns in purely extra-grammatical terms, e.g. processing and information structure, cannot be sufficient but that the difference in acceptability is a reflection of a grammatical distinction.

Experiment 3 extends the domain of investigation to different predicate types. We find that extraction out of internal arguments, i.e. subject of passives and unaccusatives and as well as objects, is preferred to extraction out of external arguments, i.e. unergative subjects. A follow-up study confirms these results when intransitive unaccusatives vs. unergatives are compared. Extraction out of unaccusative subjects is preferred to extraction out of unergative subjects. Again, complements seems to be the preferred domains of extraction.

Experiment 4 investigates a phenomenon Müller (2010) refers to as Melting. His claim is that extraction out of unergative subjects is licit when the object scrambles across the subject. We will see that the facts do not quite hold as presented by Müller. We concede, however, that a number of conflicting factors makes it difficult to draw any stronger conclusions based on this study.

The bottom line of all our experiment reported in this chapter is that only internal subjects, the complements of V, allow subextraction without any decrease in acceptability. We will argue that these facts fall out from Uriagereka's (1999) Multiple Spell-Out theory. This will necessitate, however, a slight modification of Kayne's (1994) Linear Correspondence Axiom (LCA). Concretely, we will propose that linearization is generally determined by a lexical feature on the head while the LCA is only called upon in the elsewhere case.

We will conclude Chapter 3 by presenting a construction that, to my knowledge, has not been discussed in the literature so far: Across-the-Board *Was-für* split, which has the property of ameliorating island violations in a way parallel to Parasitic Gaps. We will propose that these facts can be captured by Nunes's (2001) and Nunes & Uriagereka's (2000) treatment of Parasitic Gaps in terms of Sidewards Movement.

**Chapter 4** looks at extraction out of non-finite clauses in German. After reviewing the literature on this topic, the results of our experiments again lead us

to the conclusion that extraction out of subjects is degraded compared to extraction out of objects.

Experiment 5 directly compares non-finite sentential subjects and objects in extraposed and non-extraposed position. On top of the subject/object asymmetry that is diagnosed across the board, our results indicate that extraposition only has a marginal effect on the permeability of a domain.

Experiment 6 and 7 pick up on an observation made by Grewendorf (1989), according to which the validity of subject subextraction is determined by whether the V2 position is filled with an auxiliary or a main verb. While Grewendorf’s intuition is confirmed that there really is a main verb/auxiliary difference, this does not only hold for subject subextraction but carries over to object subextraction as well. The subject/object asymmetry persists, when this effect is controlled for. Since object subextraction is affected by the main verb/auxiliary difference as well, we speculate that this is a processing rather than a grammatical effect. Experiment 7 tries to shed light on the nature of this processing effect by investigating whether separable particle verbs show the same pattern observed by Grewendorf.

**Chapter 5** leaves German behind and looks at subject island effects in English. While many of the existing constraints were formulated largely on the basis of English, a number of apparent counterexamples have been put forward in the literature. This goes back to Ross’s formulation of the *sentential* subject condition, which explicitly exempted NP-subextraction.

Experiment 8 takes Ross’s examples as its point of departure and indicates that Pied-piping is major confounding factor with subextraction out of NPs. We find a highly significant subject/object asymmetry when the preposition is stranded but a much smaller difference when the preposition is pied-piped. We take this as evidence for an analysis of fronted PPs as hanging topics that have not undergone genuine subextraction. As a result, such constructions do not constitute counter-

evidence to the CED.

Experiment 9 then scrutinizes extraction out of subjects of ECM predicates, which have sometimes been argued to be transparent for extraction (e.g. Chomsky 2008). Our results do not confirm these judgments but indicate that extraction out of ECM complements is just as severely degraded as extraction out of regular subjects. This comes as no surprise given that under plausible assumptions such extractions both violate freezing and the CED.

Experiment 10 investigates the effect of different predicate types on the permeability of the subject, similarly to what experiments 2 and 3 did for German. In English the situation is different in as far as the subject always undergoes raising to the SpecTP position. The question remains whether the grammar takes the position of the lower copy into consideration when subextraction occurs, i.e. a non-complement position for unergatives and a complement position for passives. It turns out that this lower position is largely immaterial for the acceptability of subextraction and that extraction out of any kind of subject is strongly degraded in English.

Experiment 11, finally, scrutinizes an intriguing piece of data presented by Sauerland & Elbourne (2002), who claim that subextraction out of passive subjects is licit if the raising to SpecTP can be delayed until PF. This scenario occurs when a second quantifier is present and the interpretation of the subject in its in-situ position has a semantic effect. We do indeed find effects pointing in the direction suggested by Sauerland & Elbourne, but we are forced to conclude that our results neither fully support nor completely refute their claims.

**Chapter 6** further extends the cross-linguistic coverage. Experiment 12, collaborative work with Chizuru Nakao and Akira Omaki, revisits extraction out of non-finite sentential subjects in Japanese, which has often been claimed to be acceptable. We will point to a number of interfering factors that make it somewhat

cumbersome to test these cases in Japanese. Given, however, that we do find an interaction between subjects/objects and extraction in favor of objects, we tentatively conclude that Japanese does in fact show CED effects as well.

Experiment 13, based on collaborative work with Ivana Mitrović, briefly touches upon the difference between Left Branch Extraction (LBE) and PP-extraction(PPE) in Serbian, a language where few controlled acceptability judgment studies have been conducted so far. We find that while PPE shows the familiar CED effects, there is no subject/object asymmetry for LBE. We take this to be evidence for analyses of LBE in Slavic in terms of remnant movement (Bašić 2004) or scattered deletion (Cavar & Fanselow 2002).

**Chapter 7** provides a conclusion and suggestions for future research. Appendix A lists the instructions to the experimental studies in German, English, Serbian and Japanese. Appendix B provides the full set of stimuli of all 13 experiments.

## Chapter 2

### Background

#### 2.1 Theoretical Background

##### 2.1.1 Descriptive Generalizations

###### 2.1.1.1 The (?\*Sentential) Subject Constraint

The original observation that there is something unruly about extracting out of subjects goes back to Ross's (1967) discussion of examples like (1):

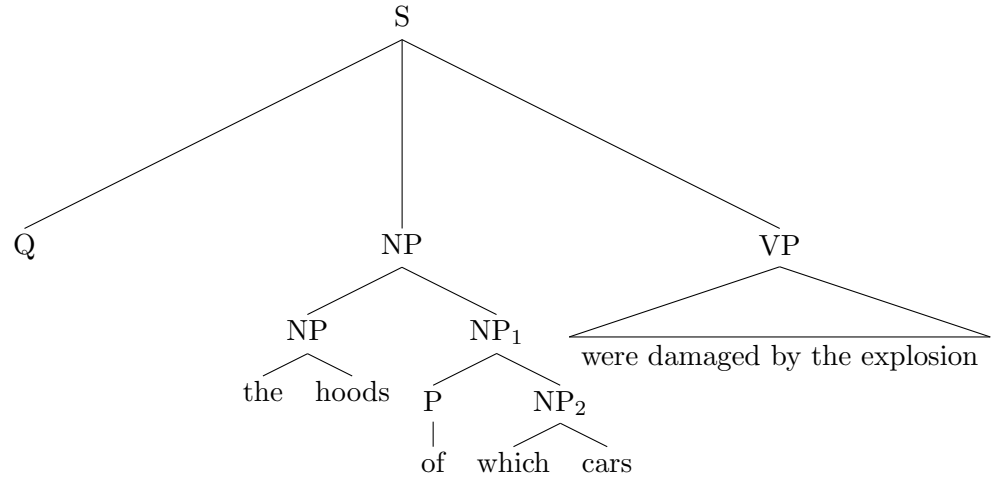
- (1) \*The teacher who that the principal would fire was expected by the reports is a crusty old battleaxe.  
(Ross 1967, p. 241, ex. 4.251b)

Ross discards the generalization that 'reordering of subconstituents of subjects noun phrases' (p.241) is illicit, arguing that such a rule would wrongly block examples like (2-a) for which he provides the structure in (2-b) (p.242, ex. 4.253).

- (2) a. Of which cars were the hoods damaged by the explosion?



b.



In (2) the NP<sub>2</sub> *of which car* is subextracted from inside the subject NP<sub>1</sub>. Ross observes that (1) differs from (2) in that the subject NP in the former is also dominated by an S, which he takes to be the crucial difference. He concludes that the following constraint holds for English:

(3) **The Sentential Subject Constraint (SSC)**

No element dominated by an S may be moved out of that S if that node S is dominated by an NP which itself is immediately dominated by S.

Even though Ross avoids the term *subject* in the definition of his constraint, the wording of the rule guarantees that only subjects but not objects are affected by it. In his system subjects are immediately dominated by S whereas objects are immediately dominated by VP. Ross purposefully exempts non-sentential subjects from his island constraints for empirical reasons. We will return to the status of examples like (2-a) in some detail in section 5.2, where we will conclude that such examples are unlikely to involve genuine subextraction.

Chomsky (1973) gives up Ross's restriction of applying the constraint to *sentential* subjects only and formulates a generalized Subject Condition.

- (4) No rule can involve  $X$ ,  $Y$  in the structure  
 $\dots X \dots [\alpha \dots Y \dots] \dots$   
 where (a)  $\alpha$  is a **subject phrase** properly containing  $Y$   
 and (b)  $Y$  is subjacent to  $X$  [my emphasis, JJ]  
 (Chomsky 1973:250, ex. (99))

Most subsequent work follows Chomsky in assuming a generalized view on subject islands rather than Ross's original generalization. In the following we will give a brief overview of some of the major empirical generalizations and theoretical developments in the discussion of subject islands.

### 2.1.1.2 The Condition on Extraction Domains (CED)

Huang (1982) formulates the following principle:

- (5) **Condition on Extraction Domain (CED)** (Huang 1982:505)  
 A phrase  $A$  may be extracted out of a domain  $B$  only if  $B$  is properly governed.

Essentially, Huang formalizes the descriptive generalization that there is a complement/non-complement asymmetry for extractability (observed earlier by Cattell 1976). While objects allow extraction, subjects and adjuncts are impermeable for movement. This is derived by a specific definition of (proper) government:

- (6) **Definition of (Proper) Government**  
 (Huang 1982:156, adopted from Chomsky 1980:25)  
 $\alpha$  is governed<sup>1</sup> by  $\beta$  if  $\alpha$  is c-commanded by  $\beta$  and no major category or major category boundary appears between  $\alpha$  and  $\beta$ .<sup>2</sup>

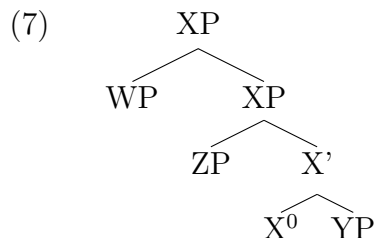
In a configuration such as (7)  $X^0$  (for  $X^0$  = lexical) properly governs its complement YP as  $X^0$  c-commands YP and there is no intervener. The specifier ZP is not

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<sup>1</sup> $\alpha$  is *properly* governed by  $\beta$  if  $\alpha$  is governed by  $\beta$  and if  $\beta$  is lexical. (slightly modified from Chomsky 1981:273)

<sup>2</sup>The second disjunct essentially defines barriers for proper government in terms of minimal c-command, i.e.  $\neg \exists \gamma$  such that  $\beta$  asymmetrically c-commands  $\gamma$  and  $\gamma$  asymmetrically c-commands  $\alpha$ .

governed by  $X^0$  since it is not c-commanded by  $X^0$ . Similarly, the adjunct WP is not c-commanded by  $X^0$  and hence not governed.



This yields the desired results in that only the complement is properly governed and a phrase may be extracted out of it. Non-complements, i.e. specifiers and adjuncts, are not properly governed and as such islands for extraction.

It is crucial that c-command be defined in terms of the first *branching* node (Reinhardt 1981) and not in terms of the first maximal projection (m-command in the sense of Aoun & Sportiche 1983). If the latter were adopted, the specifier ZP would also be properly governed since it is dominated by the same maximal projection XP as the governor.<sup>3</sup>

### 2.1.1.3 Freezing Effects

In order to understand Stepanov's proposal we will have to briefly remind ourselves of the notion of Freezing Effects. The term Freezing, as referring to a syntactic node that is no longer permeable for extraction, was first used by Wexler & Culicover (1981). Similar effects, however, were already hinted at by Ross (1974), who compares the following examples:

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<sup>3</sup>Note that in chapter 3 (p.159ff) Huang piggy-backs on this very distinction between the two different command relations to account for the configurationality parameter. While fixed word order languages follow the c-command definition of government, free word order languages adopt m-command. This makes the interesting prediction, unnoted by Huang, that subjects in free word order languages should not constitute islands. This sounds remarkably similar to the proposals made by Stepanov we will discuss below. While it seems unclear whether we would want to postulate a c- vs. m-command parameter, the descriptive generalization seems intriguing and worth further investigation.

- (8) a. [The Waco Post Office]<sub>j</sub> she will send [a picture of  $t_j$ ][to Inspector Smithers].  
 b. ??[The Waco Post Office]<sub>j</sub> she will send  $t_i$  [to Inspector Smithers][a picture of  $t_j$ ] .

He points out that 'it is more difficult to chop constituents from the shifted constituent than it is to chop them from the unshifted one.' (Ross 1974: 103).

Wexler & Culicover (1981:542) formulate the Generalized Freezing Principle:

- (9) A node is frozen if (i) its immediate structure is non-base or (ii) it has been raised.

Condition (i) of this disjunction refers to phrase markers that could not have been generated by base phrase structure rules, but have been formed as the result of a transformation. This can be illustrated with example (8). After Heavy NP-shift of *a picture of the Waco Post Office* in (8-b) the VP corresponds to a phrase structure such as V PP NP. Assuming that  $VP \rightarrow PP\ NP$  is not a base rule of English, it follows that no subconstituent of VP can be extracted out of it.

In some cases a transformation yields a phrase marker that could have also been generated by a base rule. This is why Condition (ii) is needed, which can be illustrated by the following example:

- (10) a. Some people from Philadelphia greeted me.  
 b. Some people  $t_i$  greeted me [from Philadelphia]<sub>i</sub>.  
 c. \*[What city]<sub>j</sub> did you expect some people  $t_i$  to greet you [from  $t_j$ ]<sub>i</sub>.  
 (Wexler & Culicover 1981:143)

In (10-b) the PP *from Philadelphia* has been rightward moved, yielding a phrase marker of the type V NP PP. We know, however, that the rule  $VP \rightarrow V\ NP\ PP$  is a base-rule of English, otherwise sentences like (8-a) could not be generated. To account for the ungrammaticality of (10-c) we need the second condition of

the disjunction in (9), whereby 'raising' more broadly refers to any node that has been subject to a transformation. Wexler & Culicover summarize their principle by pointing out that only 'characteristic structures', i.e. those phrase markers that were constructed by base rules alone, may be affected by transformations. Structures that have been 'distorted' by prior transformations may not be affected by further syntactic rules.

## 2.1.2 Theoretical proposals

### 2.1.2.1 Multiple Spell-Out (MSO)

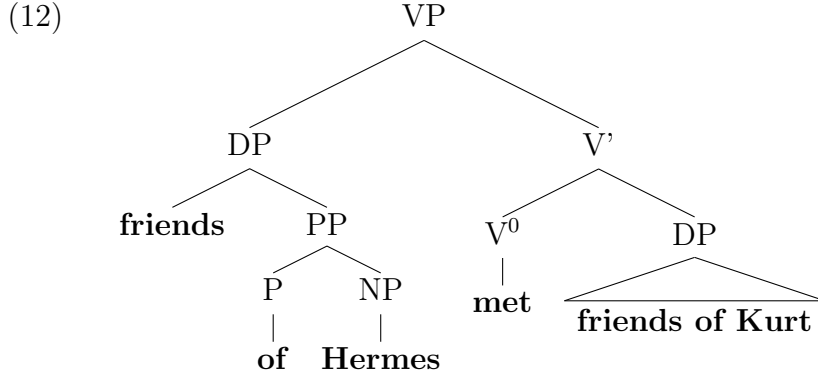
Uriagereka (1999) and Nunes & Uriagereka (2000) derive CED effects from general derivational principles of a dynamic syntactic system. In particular, they do away with the assumption that spell out (SO) applies at *exactly* one point of the derivation in favor of the assumption that spelling out structures to the interfaces is a consequence of a general linearization requirement of mapping hierarchical structure into flat strings to satisfy PF legibility requirements. As a mapping algorithm Kayne's (1994) Linear Correspondence Axiom (LCA) is employed.

- (11) **Linear Correspondence Axiom (LCA)**<sup>4</sup>  
 A lexical item  $\alpha$  precedes a lexical item  $\beta$  iff  $\alpha$  asymmetrically c-commands  $\beta$ .

Consider how the LCA applies in a structure such as (12) (terminal elements in boldface):

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<sup>4</sup>Note that this is the LCA as cited in Nunes & Uriagereka (2000:23), which holds in a SVO language like English. While retaining Kayne's basic insight that asymmetric c-command relations are mapped into linear sequences, we will give up his assumption that SOV languages also have an underlying SVO word order. This is discussed in some detail in section 3.6.1.



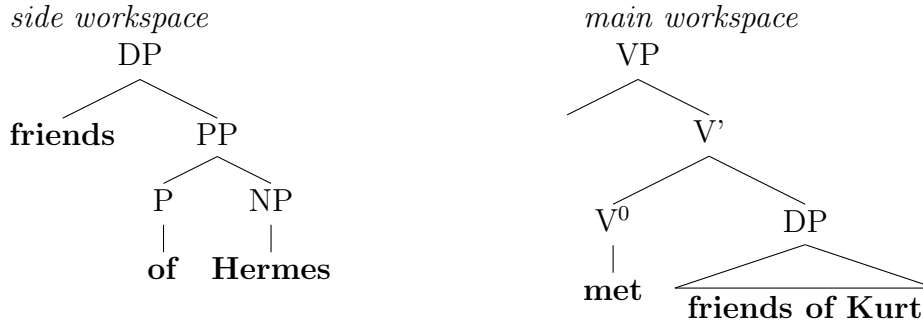
*Met* asymmetrically c-commands (a-CC) its complement *friends of Kurt* and hence also precedes it linearly<sup>5</sup>. It is easy to establish the precedence relations between a verb and its complement, but what about the specifier? We are left with the set of terminals  $\{met, friends, of, Hermes\}$ . *Met* is not in a-CC relation with any of the other terminal elements and, consequently, the precedence relations cannot be established. Essentially, this problem is not a peculiarity of the structure in (12) but generalizes to all complex specifiers (and adjuncts). How can we resolve this situation?

If we take the bottom-up derivation of our tree seriously, it follows that in order to create a structure such as (12) we need to construct two different trees in parallel in two separate workspaces. We are building the main spine and the specifier in (13):

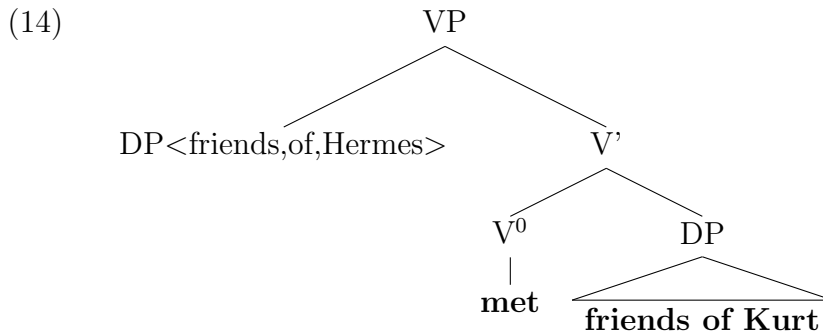
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<sup>5</sup>We are abstracting away from the details of the internal structure of the DP for the moment. Presumably the NP *friends* a-CCs the PP *of Kurt*, in which the preposition *of* a-CCs the NP *Kurt*. This would derive the right precedence relations.

(13)



If SO were a single operation at the end of a derivation, we would end up with an incomplete set of precedence relations and the derivation would not converge at PF. Uriagereka (1999) chooses to drop this assumption in favor of a dynamic cyclic application of SO. SO applies to the side workspace of (13) first, determining the precedence relations internal to this workspace<sup>6</sup>. The structure is flattened out and shipped off to the interfaces. As a result, only the label DP is available for further syntactic operations and is plugged in its position in the main spine, as shown in (14).



Uriagereka assumes that the DP has essentially been turned into a terminal element. Since it a-CCs the rest of tree, it precedes all other terminal elements in the structure. The precedence relations within the DP have also been established, i.e. 'friends' > 'of' > Hermes. He has to make the further assumption that all terminal elements

<sup>6</sup>For a discussion of how terminals that symmetrically c-command each other are spelled out see section 3.6.1

dominated by DP, whose linearization information has already been shipped off to PF, is retained in DP. We add the further requirement that, as DP precedes the rest of the tree, all terminal elements dominated by DP also precede all other elements of the tree. As a result, the set of precedence relations is complete and the derivation can converge.

How does this relate to subject islands? If SO applies in a cyclical fashion for reasons of linearization in the way just explicated, substructure of a phrase that has already been spelled-out is no longer accessible for subsequent syntactic operations. As a consequence, island effects are the result of cyclic SO. In our example at hand we can see that the elements internal to the DP *friends of Hermes* cannot be affected by the syntax anymore, i.e. you cannot extract out of it. This directly predicts classical subject island violations such as (15).

(15) \*Who<sub>*i*</sub> did friends of *t<sub>i</sub>* meet Kurt?

Extraction out of objects, on the other hand, is still possible. SO of the main spine, which the object is part of, can be held back until the very end of the derivation. As such, the substructure of the object is still available for syntactic operation and MSO correctly rules in examples like (16).

(16) Who did Hermes meet friends of *t<sub>i</sub>* ?

How does the MSO fare with freezing effects? Every attempt to extract out of a left branch will result in a significant decrease in acceptability, as we will see in our studies below. To put it blatantly, once such an extraction has taken place, that is that for the derivation. In section 3.2, however, we will see that pure CED effects and freezing effects are additive. This seems to suggest that MSO alone is not sufficient to give us full coverage of the data. We need an additional account of freezing effects on top of it.



The situation is different if complements, which would normally be domains transparent for extraction, become islands as a result of freezing. If we follow the standard assumption that movement targets either a specifier or an adjoined position, MSO gives us the desired result under some additional assumptions. Consider the example in (17) (cf. Lasnik & Saito 1992):

- (17) a. I think that you should read [articles about vowel harmony].  
 b. What<sub>j</sub> do you think that I should read articles about *t<sub>j</sub>* ?  
 c. I think that [articles about vowel harmony]<sub>i</sub> you should read *t<sub>i</sub>*.  
 d. ??What<sub>j</sub> do you think that [articles about *t<sub>j</sub>*]<sub>i</sub> you should read *t<sub>i</sub>*?

The object DP *articles about vowel harmony*, which normally allows subextraction as shown in (17-b), is a frozen domain as a result of being moved, (17-d). Let us see if this can be made to follow from MSO. We will assume that the DP *articles about what* is topicalized to some adjunction position (say TP for concreteness). For linearization purposes the DP needs to be spelled-out before it can be merged in this position, as indicated by the italics in (18).

- (18) [<sub>CP</sub> C [<sub>TP</sub> you [<sub>VP</sub> think [<sub>CP</sub> that [<sub>TP</sub> DP(*articles, about, what*) [<sub>TP</sub> you should [<sub>VP</sub> read <articles about what> ]]]]]]]

When matrix C then probes for a wh-element, it cannot access the substructure of the higher copy of *articles about what*, since it has already been spelled-out.<sup>7</sup> It could, however, still access the lower copy at this point of the derivation and movement of the lower *what* should be possible, incorrectly predicting that (17-d) should be grammatical. Nunes & Uriagereka (2000) are aware of this problem and suggest that no chains can be formed between two copies of a syntactic object if

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<sup>7</sup>Norbert Hornstein (p.c.) points out that this is a non-trivial assumption, as it still needs to be made more precise how and why SO renders structures inaccessible to the syntactic component. In a sense, the structure is stripped of the features relevant to the syntax. In other words, SO converts a structure into a format that can only be read by PF but not by narrow syntax. It is an interesting question of what exactly this mechanism is and how it could be formalized. This is beyond the scope of this dissertation but clearly an interesting question for future research.

one copy has already been spelled-out while the other has not. For this reason they stipulate that spell-out precedes copying, i.e. the lower copy needs to be spelled-out before it can be moved to yield a licit chain, as shown in (19).

- (19)  $[_{CP} C [_{TP} \text{you} [_{VP} \text{think} [_{CP} \text{that} [_{TP} \text{DP}(\textit{articles, about, what}) [_{TP} \text{you should} [_{VP} \text{read DP}(\textit{articles, about, what}) ]]]]]]]]$

Now, the lower copy of *articles about what* has already been spelled-out as well, when matrix C tries to probe it and the derivation does not converge.<sup>8</sup> Norbert Hornstein (p.c.) points out that this might fall out from minimality, i.e. the higher copy is structurally closer than the lower copy and hence the lower copy cannot be targeted by C. Unfortunately, this is only true if we consider the copies in their entirety. The higher copy (*articles, about, what*) indeed A-CCs the lower one. The wh-element *what* itself, however, does not c-command out of its DP. Since this is presumably the element C probes for, minimality does not solve the problem in any straightforward way. Alternatively, it could be argued that the path of the higher copy of 'what' to C is shorter than from the lower copy of 'what' to C. While that is true, it presupposes that the higher copy of 'what' is still accessible for the computation of the paths. This, however, would run counter the idea of cyclic SO since we assume that SO renders a structure inaccessible to subsequent syntactic operations. Computing paths quite plausibly requires the full pre-SO syntactic structure. There does not seem to be any straightforward solution in terms of minimality.

Note that it is an empirical question whether Nunes & Uriagereka's condition on chain formation is necessary. This depends on the status of subextraction out of subjects that originated in a complement position, i.e. unaccusatives, passives and possibly complements of ECM predicates. Recall from the discussion in section 2.1.1.1 above that Ross judged extraction out of non-sentential passive subjects to

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<sup>8</sup>See Nunes & Uriagereka (2000: 26ff.) for further discussion and Sheehan (2009) for an alternative solution.

be acceptable, as indicated by (2-a) repeated as (20):

- (20) Of which cars were the hoods damaged by the explosion?

This position has recently undergone a renaissance with Chomsky's (2008) advocating for the well-formedness of the following examples:

- (21) a. it was the CAR (not the TRUCK) of which [the (driver, picture) was found]  
b. of which car did they believe the (driver, picture) to have caused a scandal

If these cases are indeed acceptable it seems like the structural position of the lower copy does play a role after all, and Nunes & Uriagereka's stipulation is not needed. We will return to these cases in some detail in Chapter 5. Acceptability judgment data will lead us to the conclusion that in English the structural position of the lower copy is largely immaterial, i.e. a lower copy in the complement position does not save the sentence from severe unacceptability.

### 2.1.2.2 Subject island effects as Freezing Effects

There have been recent proposals in the literature to do away with the CED completely (Stepanov 2001, 2007, Truswell 2007). The claim is that the CED is empirically inaccurate and that extraction out of in-situ subjects is licit while extraction out of adjuncts<sup>9</sup> is ungrammatical across languages. Stepanov argues that subject island effects are reducible to freezing effects, i.e., subjects are not islands for extraction *per se* but they become opaque as a result of being moved. That is why languages like English, which obligatorily raise the subject to SpecTP, show island effects while languages that allow for the subject to be in situ (e.g. German,

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<sup>9</sup>There are reasons to doubt that the generalization about adjuncts is correct, see Cinque (1990, Truswell (2007), Yoshida (2006) among others for counterexamples.

Japanese, Turkish) do not show such effects.

If Stepanov’s generalization is correct, this would have highly significant implications for all theories that aim at deriving complement/non-complement asymmetries (such as Chomsky 1986<sup>10</sup> or Uriagereka 1999). If such an asymmetry does not exist, clearly there would not be any need for theories to account for it. Even worse, such accounts would undergenerate since they predict that extraction out of non-complements should be generally ruled out. Stepanov very explicitly tries to do away with such theories. He proposes an ‘eclectic account’ of CED effects, reducing subject islands to freezing effects and treating adjunct islands by a completely different mechanism. Concretely, he argues for accounting for subject island effects with Takahashi’s (1994) Chain Uniformity condition, which bans the adjunction to any link of non-trivial chains, i.e., previously moved constituents become opaque for extraction out of them (= freezing). While Stepanov’s line of argument seems compelling, there are reasons to question whether he provides a complete picture of the data. Since the stakes are very high for a number of theoretical proposals, it is of utmost theoretical importance to get a clearer picture of the facts.

## 2.2 The inadequacy of informal judgments

Before we delve into the details of our experiments on CED effects crosslinguistically, a few methodological points need to be clarified. The core of this thesis is formed by data of controlled acceptability judgment studies. While more and more linguists employ acceptability judgment studies, and their usefulness has become less and less a point of contention, I still think it is worthwhile to dedicate some space to why such experiments can give us invaluable insight into certain empirical domains. This section will focus on general points. Arguments for the need for more reliable

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<sup>10</sup>For reasons of space we will not summarize Chomsky’s Barriers framework. The reader is referred to Chomsky (1986) or a more digestible version in Lasnik & Saito (1992:69-75).

data in the domain of CED effects in particular will be given in later chapters.

### 2.2.1 De iudiciis non est disputandum?

I know of no linguist who has never stumbled across an example sentence in a paper on his native language that prompted him to exclaim one of the following: *Really? That's supposed to be grammatical?* or *No way! That sounds totally fine!*<sup>11</sup> Sometimes this very example happens to be a crucial data point in the discussion, and you might start wondering: I am native speaker, the author is a native speaker, or if not he or she claims to have consulted with native speakers. And still we do not seem to have the same opinion about this judgment. What is going on?

What causes these disagreements concerning judgments? One logical possibility is clearly that we are faced with different idiolects. After all, it is I-language we are interested in, not E-language or vague and virtually undefinable notions such as *English*, *German* or *Japanese*. If we disagree on a specific judgment, our idiolects differ, and there is nothing else we can do. This is a logically coherent position and a very tempting one, but one that is a non-starter if we are interested in serious investigation of a given phenomenon. Here is why:

We cannot directly observe people's abstract mental representations of their grammar. We can only indirectly access them by eliciting well-formedness judgments on specific outputs of this I-language, i.e. concrete example sentences. A judgment of this sort is by definition subjective and as such not amenable to objective scientific inquiry. Of course any native speaker can insist on a particular judgment, and it is logically impossible to prove him or her wrong. This rather stubborn and dogmatic position is what Featherston (2007, p. 279) quite appropriately dubs the 'my idiolect' gambit. With it, any further discussion is scotched. Any chance of drawing generalizations based on observable trends within a larger number of

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<sup>11</sup>For semantics papers we might add: *Of course this reading is available! What are you talking about?*

judgments and speakers is forfeited. Playing the 'my idiolect' gambit comes at the price of unfalsifiability. In short, we are in danger of leaving the realm of science.

Linguistic judgments are not matters of taste in the sense that preferences in food or music are. There is no clear answer to whether Bob Dylan's latest album is good or bad. I am a big admirer of his, but I believe it is somewhat overrated, an opinion for which many Dylan fans and music critics around the world would throw tomatoes at me. And that is not a problem. Tastes differ. It does not, however, seem particularly desirable if linguists were to turn to throwing tomatoes whenever they disagree about a judgment. Judgments in linguistics are not a matter of taste in the same sense as opinions about records. *Unlike taste, there is indeed arguing about acceptability judgments.* If we find ourselves in disagreement, it is not good enough to shrug our shoulders and conclude that this is an unsolvable dispute. We can try harder, we can control for potential interfering factors, we can ask a larger number of speakers under the same conditions, we can gather judgments about multiple lexicalizations of a certain construction, and we can resort to well-known statistical tests to separate the noise from the meaningful signal we are interested in.

Perhaps, after we have controlled for all these factors, it in fact turns out that our judgments reflect dialectal differences of some sort. Great! We now have settled the dispute, and it is indeed the case that we are both right. We both win! How often does that happen? We can now proceed to worrying about the source of this variation, if it holds systematically for an entire construction or just for a few isolated examples and if it correlates with other differences between our grammars. Importantly, however, this is only the second step after we have convincingly and thoroughly established that such a difference in fact exists.

## 2.2.2 Operational procedures

The question of how to obtain reliable data about linguistic competence has been a matter of concern since the earliest days of generative grammar. Informal introspection was accepted as the technique of choice, not so much out of conviction but rather because of a lack of alternative methods. In *Aspects*, Chomsky very explicitly discusses the limitations of informal judgments and anticipates that there might be better techniques in the future.<sup>12</sup>

In brief, it is unfortunately the case that no adequate formalizable techniques are known for obtaining reliable information concerning the facts of linguistic structure (nor is this particularly surprising). There are, in other words, very few reliable experimental or data-processing procedures for obtaining significant information concerning the linguistic intuition of the native speaker. [...] *If operational procedures were available that met this test, we might be justified in relying on their results in unclear and difficult cases.* This remains a hope for the future rather than a present reality, however. [my emphasis, JJ]  
[Chomsky 1965, p. 19]

Fortunately, the field has made significant progress since the sixties, and more reliable experimental procedures of the kind Chomsky anticipated for the future can now be called upon in the case of doubtful judgments. Bard et. al (1996), Schütze 1996, Keller (2000), Sprouse (2007) and Featherston (2007) are only a few instances of the ever growing popularity of experimental data elicitation.<sup>13</sup> A number of requirements and desiderata for improved and experimentally more sound data collection have been proposed. I will only list the requirements here without much comment about their motivation or their usefulness. The reader is referred to the meticulously thorough discussion in Schütze (1996) and Featherston's (2007) programmatic paper:

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<sup>12</sup>Thanks to N. Hornstein for bringing my awareness to this passage.

<sup>13</sup>Mind you, these techniques obviously still only collect people's judgments about the acceptability of a certain string and as such only indirectly shed light on the underlying mental grammar. We still have not invented machines to directly measure people's intuitions, and it is highly doubtful if such techniques will ever exist or if their existence is even possible.

- The items are presented as **controlled conditions**, i.e. sentences only vary in the one factor that is being tested while everything else is held constant (minimal pairs).
- Speakers are presented with **several lexicalizations per condition** to test identical constructions using different lexical items. This minimizes the chance of mistaking a purely lexical for a structural effect.
- The test items are interspersed with **balanced fillers**, i.e. speakers see fillers of all levels of acceptability (from monoclausal wh-questions to CSC violations).
- The stimuli are presented in a **Latin square design** to guarantee that potential noise is spread across conditions in order not to bias one condition disproportionately.<sup>14</sup>
- The test items and the fillers are **pseudo-randomized**, presenting the items in a random order while making sure that fillers and test sentences alternate.
- Only **'naive' participants** are tested, i.e. speakers that have had no prior training in formal linguistics.<sup>15</sup>

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<sup>14</sup>In a Latin square design the first lexicalization of the first condition is assigned to the first list of stimuli, the second lexicalization of the first condition is assigned to the second list of stimuli, the third lexicalization of the first condition is assigned to the third list of stimuli. Then the second lexicalization of the second condition is added to the first list, the third lexicalization of the second condition is added to the second list etc. until all lexicalization of all conditions are assigned to a list. This is illustrated in the following table representing a Latin square design for an experiment with four conditions (S = list of stimuli, C = condition, L = lexicalization):

i.

	S <sub>1</sub>	S <sub>2</sub>	S <sub>3</sub>	S <sub>4</sub>
C <sub>1</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>
C <sub>2</sub>	L <sub>2</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>1</sub>
C <sub>3</sub>	L <sub>3</sub>	L <sub>4</sub>	L <sub>1</sub>	L <sub>2</sub>
C <sub>4</sub>	L <sub>4</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>

<sup>15</sup>It is a desideratum in linguistic experiments to exclude trained linguists from the pool of



- Participants are given **detailed instructions** to make sure they understand what is being tested (descriptive vs. prescriptive judgments, grammatical acceptability vs. pragmatic plausibility etc.)
- Participants are given **test trials** to get accommodated with the task.

These are all criteria that are relatively straightforward to incorporate in the data gathering process. Running an experiment, however, is still more cumbersome than engaging in what is sometimes affectionately called 'armchair linguistics', or asking your colleague next door to engage in 'armchair linguistics' with you. So is there a reason to frantically jump out of your armchair and anxiously inquire: *I have to do all of this every time I want to report a judgment?* There is no reason for concern. We do not need to crack every syntactic nut with a sledgehammer. Some examples are just as obviously good as others are bad. A classic case is subject-verb agreement in English:

- (22)    a.    John is here.  
           b.    \*John are here.

It would undoubtedly be a waste of time and research money to run a full-fledged acceptability judgment study if all you are trying to show is that there is contrast between (22-a) and (22-b). Armchair linguistics is clearly the method of choice here.<sup>16</sup> And only looking at clear cases of this sort can indeed give us considerable

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participants. This is done to prevent speakers from rating judgments based on their theoretical beliefs rather than their introspective intuitions (see Schütze 1996:113ff. for discussion and a summary of experimental studies indicating that this is in fact true). That linguists are in fact biased and hence worse judges has recently been challenged (see Culbertson and Gross 2009 for discussion). For the time being I will follow the current practice of excluding linguists from the experiments, not because I believe them to be prone to purposefully giving wrong judgments to provide evidence for their or someone else's theory, but mainly because the theoretical beliefs you hold literally change the reality of your judgment. Testing only people that do not have any explicit beliefs about a given structure is a way to avoid this Constructivist trap.

<sup>16</sup>Even with something seemingly as straightforward as subject-verb agreement in English things can get tricky: The sentence *The key to the cabinets are on the table.* sounds significantly more

mileage and might be sufficient in certain domains (see Phillips 2009 and Featherston to appear for essentially this conclusion).

Crucially, more formal methods of data collection do by no means replace proper linguistic analyses. Luckily, this is not a question of *either or*. A reasonable balance between data and theory is desirable. And there are many areas where less straightforward facts have a direct bearing on our theory. And clearly, as Featherston (2007) points out repeatedly, our theory is only as good as our data. We will see throughout this thesis that islands in general and CED effects in particular are a domain where these kinds of studies can be usefully applied.

### 2.2.3 Arrogance and modesty

Why then is there still a reluctance in employing experimental techniques in theoretical linguistics? Why do recent papers, published in prestigious journals, often still use data to support their theories that has to be classified somewhere between highly controversial and blatantly wrong? (we will return to numerous examples of such cases in the next chapters). Haider (2009) addresses these questions in a trademark humorous fashion. He invokes the 19th century psychologist Wilhelm Wundt (1845-1920) who quite eloquently attributes the theoreticians' opposition to experiments to two seemingly contrary forces, *arrogance* and *modesty*.

Die eine Eigenschaft ist der Hochmuth. Es gibt ja immer noch einige Leute, die das Experimentieren für eine banausische Kunst halten, mit der man sich nicht befassen dürfe, wenn man nicht des Privilegiums, im Aether des reinen Gedanken zu hausens, verlustig gehen wolle. [...] Die andere Eigenschaft ist die falsche Bescheidenheit. Jede Kunst scheint in der Regel dem, der sie nicht versteht, viel schwerer als sie wirklich ist. [*One property is arrogance. There are still some people who consider experimenting a philistine art, which one should not deal with, if one does not want to risk losing the privilege of residing in the pure ether*]

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acceptable to speakers than (22-b), at least on a first parse. Here, more controlled experimental work is clearly desirable and has in fact been done (see Phillips et al. to appear and the references therein for discussion).

*of thoughts. The other property is mistaken modesty. Every art usually tends to appear to be more difficult than it really is to those who do not understand it.*, translation by Haider (2009)]  
[Wundt 1888, p.292-309]

Wundt is widely regarded as the founding father of experimental psychology. Haider points out that Wundt was highly influential in transforming the field of psychology from a discipline largely interested in 'the pure ether of thoughts' to a hard science comparable to physics or chemistry. Haider goes on to argue that linguistics has not made this transition yet but is only currently undergoing a transformation from the dark ages of alchemy to the mature science of chemistry. Linguistics, he claims, still contains 'quite some phlogiston-theories'.

Haider's reckoning with the current state of the field of linguistics certainly needs to be taken with a grain of salt. But just like other comical exaggerations, his discussion contains certain elements of truth, which most experimentalists are likely to have experienced themselves when presenting studies on controversial data to a group of theoretical scholars. The bottom line of Haider's discussion is: 'if linguistics wants to be respected as a branch of (cognitive) science, it has to accept and apply the empirical standards of (cognitive) science'. While this might be somewhat blown out of proportion for dramatic effects, a little more care when collecting data certainly cannot hurt. At the same time, we must not forget that the data is never free of theory, nor should it be. Our theoretical constructs point us to look at specific pieces of data, which in turn might cause us to modify our theoretical constructs. Or as Kant put it so pointedly in his *Critique of Pure Reason*:

Gedanken ohne Inhalt sind leer, Anschauungen ohne Begriffe sind blind.  
[Thoughts without content are empty, intuitions without concepts are blind]<sup>17</sup>.

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<sup>17</sup>Thanks to Norbert Hornstein for providing me with this Kant quote

### 2.2.4 Judgment = Grammar + X

To say that the relation between acceptability and grammaticality is non-trivial and poorly understood is one of the biggest euphemisms in linguistics. We have already mentioned that we can only gather acceptability judgments by introspection of our own native speaker knowledge or by eliciting data from other native speakers. The term 'grammaticality judgment' is meaningless. There are no judgments about the grammaticality of a given sentence. We might state that sentence S is grammatical, by which we mean that our grammatical theory allows S to be generated. But we do not have any intuitions about the grammaticality of a sentence. Sometimes we can immediately point to the grammatical constraint which we assume to have caused our perceived decrease in acceptability. If the violation is blatant enough, non-linguists might be able to do so too. This still does not imply that we have intuitions about the grammaticality of a sentence. It only means that our intuitions tell us that sentence S is unacceptable, and *post hoc* analytic reasoning sometimes allows us to identify a grammatical principle responsible for this degradation.

The problem we face whenever we gather an acceptability judgment and try to make claims about the underlying grammar is the following:

$$(23) \quad \text{Judgment} = \text{Grammar} + X$$

What is the X? This is ultimately a question that cannot be decided on the basis of the data alone but requires certain theoretical assumptions. It is a logically coherent position, and the one assumed by a large portion of the field, that the grammar is binary and all gradience we find in our judgments comes from the X-factor. This leads many theoretical linguists to tacitly adopt a binary view on grammatical constraints. A direct consequence of this position is the assumption that if sentence A violates constraint X, it is ungrammatical. If there is an instance of sentence A that some speakers find acceptable, constraint X does not exist in this

language or is wrongly understood. The radically binary view on grammaticality is expressed pointedly by Haider (1993:159), who argues that in order to disprove the correctness of a grammatical principle a *single* example is sufficient (original emphasis)<sup>18</sup>

This statement explicitly presupposes viewing grammaticality in terms of absolute categoricity, i.e. a sentence is either grammatical or not. Since the earliest days of generative grammar, however, this view has been known to be nothing more than a useful abstraction of the facts. In *Syntactic Structures*, Chomsky (1957) points to the need for developing a 'notion of degree of grammaticalness'. In *Aspects* (Chomsky 1965), he emphasizes that 'like acceptability, grammaticalness is, no doubt, a matter of degree' and later he reiterates that 'an adequate linguistic theory will have to recognize degrees of grammaticalness' (Chomsky 1975). Note that Chomsky consistently talks about gradient *grammaticalness* and not just gradient acceptability.

Despite being very explicit that grammaticality is gradient, Chomsky, and with him the majority of theoretical syntacticians, have worked under the abstraction of binary categoricity. However, when working with real data, they very often encountered cases that would not nicely fit into one of those two categories, and they saw the need for intermediate judgments. This resulted in a quite creative semiotic system, including such notations as: \*, ?, \*\*, ??, \*?, #, %, ?, ː, ːː, etc.

If grammaticality comes in a continuous scale but we consistently try to squeeze it into a binary distinction, it does not come as a surprise that we find contradictory judgments in the literature. It is quite absurd to give people a grey square and asked them whether it is 'black' or 'white'. Some people will say it is black, others that it is white. Does that mean people's perception of color differs? This seems like a highly unlikely conclusion. What seems to be happening is that

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<sup>18</sup>Given Haider's recent fervent advocacy of experimental methods in theoretical syntax we might assume that he has slightly changed his position. But this is only speculation.

we are asking a misleading question.<sup>19</sup>

Returning to (23), we have to stress that the question of whether the gradience found for a given sentence comes from the grammar or from the X-factor cannot be decided on purely empirical grounds. Every datum is interpreted by a researcher who is forced to make a theoretical decision. Of course, we can locate certain factors we know are part of X and control for them as meticulously as possible. However, given that our understanding of X and how it interacts with the grammar is very limited, there is always a point where we have to make assumptions about where gradience is actually reflective of the grammar itself. This holds true for the experiments discussed in this thesis as well. I will try to be as explicit as possible about these assumptions and justify them as well as I can.

It needs to be emphasized that it is not within the scope of this dissertation to provide any detailed theory of how gradient grammaticality could be modelled. The reader is referred to Keller (2000, chapters 6 and 7) for very insightful discussion. Furthermore, I do not have much to add to big picture questions such as the epistemological nature of judgments or the biological reality of the notion of grammaticality. The goal - more modest but potentially more realistic - is to employ more fine-grained experimental techniques that can capture previously unnoticed differences in acceptability. These differences in acceptability are argued to be reflective of underlying differences in grammaticality. These differences allow us to provide evidence for one theory over another, and as such bring us closer to a better understanding of how the language faculty operates.

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<sup>19</sup>In fact it turns out that gradience even manifests itself in binary judgment task if enough data is collected. Goodall et al. (2010) compared yes/no with Magnitude Estimation (ME) and 7-point scale tasks and found that all three methods led to statistically non-significantly different results. Yes/no and 7-point scale tasks even had the advantage of producing less noise than ME. Their studies, however, only investigate very strong contrast. It would be worthwhile replicating these comparisons with more subtle differences.

### 2.2.4.1 Capturing gradience

Experimental studies following the methodological protocol discussed in the last section can incorporate gradience in a number of ways. The technique of choice has often been Magnitude Estimation (ME) (e.g. Bard et al. 1996, Keller 2000). In ME speakers are given a base line sentence and are asked to assign this item an arbitrary numerical score, say 100. Then they judge the test items with respect to this baseline or reference sentence, e.g. base line items A receives a score of 100, item B sounds half as acceptable and gets 50, item C is somewhere in between A and B and gets 75 etc. ME has been argued to not force a scale on people and be in principle open-ended (see Sprouse 2007, p.11ff for detailed discussion).

ME has been praised to the skies as *the* best technique for gathering acceptability judgments, to the extent that ME studies became almost a synonymous term with controlled acceptability judgment experiments. In ME no scale is imposed upon the speakers so that even the most subtle difference can be encoded. The scale is in principle open ended and ME data is interval data and can be analyzed using parametric statistics. This entails that the intervals between the data are meaningful and that the observations are normally distributed.

Controlled experiments and ME, however, are not mutually inclusive. They are two methodological aspects that have to be kept separate. There can be very poorly controlled studies using ME just as there can be very carefully designed experiments employing techniques such as 5 or 7-point Likert scales or even binary Yes/No tasks. As a matter of fact, there have been a number of meta-studies (Sprouse 2007, Weskott & Fanselow 2008, Murphy & Vogel 2008, Goodall et al. 2010) all pointing towards the conclusion that ME does not yield better data than other techniques. Weskott & Fanselow (2008, p.431) argue that 'not only do Likert-scale judgments provide the same amount of information about a given empirical hypothesis, but also that the inherent variability of ME judgments makes them more

susceptible to the production of spurious variance.’

Sprouse points to a number of potentially severe problems. First, he finds that speakers impose categoricity on the continuous scale. As a result, ME is not immune to floor and ceiling effects, as it is often praised for. Second, he finds that the choice of the reference not only effects the absolute values participants assign to each item but even the ranking between them. In other words, item A is judged more acceptable than item B if X is the reference sentence, but B is more acceptable than A if Y is the reference sentence. If this finding is confirmed in other studies, this would be a potentially detrimental problem for ME. The experimenter could, consciously or unconsciously, bias the results in this way. Needless to say, this would not be an improvement compared to informal introspection data. It might be even worse since skewed data would present itself in the guise of hard experimental results.

For the above reasons all experiments in this thesis employed a 7-point Likert scale instead of ME. We will follow the methodological protocol outlined in the previous section. Further details about the methodology of each experiment will be given in the respective chapters. All stimuli used can be found in the Appendix.

### 2.2.5 Christmas trees

In conclusion of this chapter let me point to another source of disagreements on specific informal judgments, which can be found over and over again in the theoretical literature. To illustrate, let us consider an anecdotal analogy. Last Christmas I went to see the Christmas tree in front of Rockefeller Center for the first time in my life. I was very excited. I had seen it on TV and always pictured it as gigantically huge. When I saw it in reality I was a bit disappointed. "This is not as big as I imagined. I have seen bigger!" Returning to Washington DC, I was passing the White House and saw the Christmas tree there. "Now, that is a big Christmas tree!"



Why are people only talking about the one in front of Rockefeller Center?” In my head images similar to the ones in Figure 2.1 were popping up.

Figure 2.1: Christmas Trees in front of the White House and Rockefeller Center



It took me a minute before I made the relatively trivial realization that the White House Christmas Tree is next to a 58-foot (17.7m) tall building, while the Rockefeller Center Christmas is right in front of a 872-foot (266 m) tall building with 70 floors. I looked up the sizes of the trees later and it turns out that the Rockefeller Center tree is in fact 58-foot (17.7m) higher than the White House Tree (76-foot vs. 18-foot).

Why am I talking about Christmas Trees in a dissertation on syntax? The optical illusion created by the relative placement of an object was strongly reminiscent of what can be found in many theoretical papers. The author is presenting a perceived contrast between sentence A and B, and immediately concludes that A is grammatical and B is ungrammatical. A different author notices a contrast between B and C and concludes that B is grammatical while C is ungrammatical. Now we have two authors, the one claims that B is ungrammatical, the other one claims that B is grammatical? Who is right?

The point is that both are right in that they have noticed a contrast in acceptability between two examples. They might both be wrong at the same time in the conclusions they draw. Presenting a pair-wise contrast is often not good enough, especially in domains with intermediate judgments. The full paradigm is needed. Let me illustrate with an example from German. We will return to these cases in the following chapter.

- (24) a. \*Was haben für Leute deine Mutter besucht?  
           what have for people your mother visited  
           'What kind of people visited your mother?'  
       b. Was hast du in Italien für Museen besucht?  
           what have you in Italy for museums visited  
           'What sort of museums did you visit in Italy?'  
           [den Besten 1985]
- (25) a. Was haben denn für Ameisen einen Postbeamten gebissen?  
           What have PRT for ants a postman bitten  
           'What kind of ants bit the postman?'  
       b. \*Was haben für Ameisen denn einen Postbeamten gebissen?  
           What have for ants PRT a postman bitten  
           'What kind of ants bit the postman?'  
           [Diesing 1990]

(24-a) is judged unacceptable by den Besten (1985), while (25-a), which is virtually identical in all relevant respects, is judged acceptable by Diesing (1990).<sup>20</sup> In both cases *was-für* split out of the subject of an unergative has taken place. What differs, however, is the two authors' frame of reference. Diesing contrasts it with the extraction out of a derived subject in (25-b), while den Besten contrasts it with extraction out of an object in (24-b). This fits exactly the template outlined above. (24-a) sounds relatively worse compared to (24-b), while (25-a) sounds relatively

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<sup>20</sup>One difference is the presence of an adverbial particle in (25-a). This forces a construal of the subject in *vP* and not *TP*. This structural analysis, however, should also be possible, yet not required, in (24-a). We will return to these issues in the next chapter.

better compared to (25-b). If you are forced to make a binary choice, it is no surprise that Diesing and den Besten reach the exact opposite conclusions. Both authors' point of view is skewed because neither considers the full data set to realize that the status of B, extraction out of external subjects in this case, is in fact intermediate. This is what we will find confirmed in a number of studies, discussed in the following chapters.

## Chapter 3

### NP-Subextraction in German

#### 3.1 Introduction

In this chapter we will investigate subextraction out of NPs in German. To this end, we will scrutinize the *was-für* split construction. We are primarily interested in how the origin of the extraction site influences the overall acceptability of the sentence. In particular, we will vary whether the extraction took place out of an internal argument, i.e. objects, unaccusative and passive subjects, or out of an external argument, i.e. intransitive and transitive unergative subjects. Furthermore, we will investigate the role of freezing effects, i.e. whether the extraction originated from a moved or an in-situ domain. This will allow us to shed light on a controversial and largely unsettled issue in the theoretical literature on German and to test the claims made by Stepanov (2007), discussed in section 2.1.2.2.

German is one of the languages claimed to allow extraction out of in-situ subjects (Haider 1983, 1993, Diesing 1992 among others, see section 3.1.3 for a review of the literature). *was-für* split is a very useful construction in that it allows us to tease apart CED effects from freezing effects. We will see that all the experiments discussed in this chapter converge on the conclusion that CED effects need to be kept separate from freezing effects. German shows complement/non-complement asymmetries even in unmoved domains, while extraction out of moved constituents incurs further cost.

### 3.1.1 What's a subject?

Before we delve into the discussion of the structural restrictions on subextraction in German in general and the (non)transparency of subjects in particular, some terminological clarifications of the terms 'subject' and 'subject position' are in order. The term 'subject' is drawn from traditional descriptive grammar and is notoriously ill-defined.<sup>1</sup>

The term 'subject' is not normally a primitive or formally defined notion in generative grammar. It has been, however, commonly used as a descriptive term to refer to a number of closely related yet often not identical concepts (see McCloskey 1997 for an overview of the notion 'subject' in generative grammar). We will concern ourselves with the notion of subject primarily as a syntactic entity and we will only be interested in its semantic aspects to the extent that they affect its structural position.

It is important to note that we do not expect UG to impose constraints on inhomogeneous and ultimately undefinable concepts such as subjects. Ross's (1967) original formulation of the Sentential Subject Constraint was already stated in terms of a constraint on an abstract structural description:

(1) **The Sentential Subject Constraint (SSC)**

No element dominated by an S may be moved out of that S if that node S is dominated by an NP which itself is immediately dominated by S.

Ross avoids the term 'subject' in the definition of his constraint but the wording of the rule guarantees that only subjects and not objects are affected by it. In his system subjects are immediately dominated by S whereas objects are immediately dominated by VP.

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<sup>1</sup>It goes back at least to Aristotle's *Organon* who coins the term *ὑποκείμενον* or 'the underlying thing' (lat.: *subiectum*), which corresponds to an entity that can be predicated over (for a history of the term see C.J.F. Williams 1985).

While the term 'subject' was (and still is) widely used for expository purposes, we expect UG to operate on more abstract and more general notions. Specifically, if Uriagereka (1999) is on the right track it seems that what could descriptively be termed complement/non-complement asymmetries follows from the structure building mechanism of phrase markers. In essence, extraction is licit only out of elements that have been assembled as part of the main spine. Such a theory is quite appealing aesthetically and from the point of parsimony. But of course it can only be maintained if it covers the empirical facts in an appropriate and satisfactory fashion. It is a central claim of this dissertation that the generalization according to which complements are the preferred extraction domains is empirically tenable.

### 3.1.2 Subject positions in German

#### 3.1.2.1 SpecCP

The term 'subject position' in German is used in the literature somewhat confusingly to refer to a number of different positions. For our purposes it is crucial to make precise what we mean by this term. Importantly, we do not refer to the first position of V2 declarative clauses. The latter is traditionally identified as a topic position and linked with SpecCP in generative analyses (cf. den Besten 1977/1983).<sup>2</sup> While the German subject can occupy this topic position - and in fact does so in the information-structurally unmarked case - it need not do so and can remain in the *Mittelfeld*, i.e. following the finite verb. I will refer to the sentence initial position in V2 clauses as 'topic position' or SpecCP (cf. Svenonius 2001, 213ff. for discussion of the topic position in Germanic).

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<sup>2</sup>I am agnostic as to whether the C-domain in German is more complex along the lines suggested for Italian by Rizzi (1997). If such a view were adopted the topic position would be identified with SpecTopP.

### 3.1.2.2 Spec*v*P and SpecTP

Furthermore, we will assume that German has two subject positions in the *Mittelfeld*, an in-situ position internal to *v*P and a derived position in SpecTP (as argued for by Webelhuth 1989, Grewendorf 1989, Diesing 1992, Müller 1999, 2010, Wurmbrand 2004 and Stepanov 2007). Let us consider two arguments for the existence of these positions. The reader is referred to the literature for additional evidence.

Indefinite subjects can optionally raise to TP or stay in-situ. Definites, on the other hand, obligatorily raise to TP in the unmarked case. Consider the following examples (subjects in boldface, capitals indicate prosodic stress):

- (2) a. Es hat **ein Lama** doch tatsächlich in meinem Garten  
 it has a lama indeed in.fact in my garden  
 übernachtet.  
 spend.the.night  
 '(Believe it or not) A lama spent the night in my backyard.'
- b. Es hat doch tatsächlich **ein Lama** in meinem Garten  
 it has indeed in.fact a lama in my garden  
 übernachtet.  
 spend.the.night  
 '(Believe it or not) A lama spent the night in my backyard.'
- c. Es hat **das Lama** doch tatsächlich in meinem Garten  
 it has the lama indeed in.fact in my garden  
 übernachtet.  
 spend.the.night  
 '(Believe it or not) The lama spent the night in my backyard.'
- d. #Es hat doch tatsächlich **das LAMA** in meinem Garten  
 it has indeed in.fact the lama in my garden  
 übernachtet.  
 spend.the.night  
 '(Believe it or not) It was the lama that spent the night in my backyard.'

In these examples the adverbial particles *doch tatsächlich* are used to demarcate the VP-boundary (as proposed by Webelhuth 1989, Diesing 1992 among others). German abounds with modal particles of this sort, which are notoriously difficult to translate. *Doch tatsächlich* adds a flavor of surprise and dismay to the proposition.

I am not sure how well my English translation covers this meaning but it seems to go in the right direction.

(2-a) and (2-b) show that the indefinite subject *ein Lama* can appear either in its VP-internal position or raise above the adverbial particles to TP. It should be noted that the contrast between (2-c), where the definite subject has raised, and (2-d), where the definite subject follows the adverbial particles, is not a contrast in terms of grammaticality. (2-d) is not ungrammatical but has a marked word order, as indicated by the # sign, and is only felicitous in particular pragmatic contexts. (2-a), (2-b) and (2-c) can all be uttered in an out-of-the blue context. (2-d), however, is only felicitous with prosodic stress on *das Lama*, indicated by the capitals. The fact that some *spending the night*-event took place is now background information and the focus is shifted to the fact that a lama is agent of this event opposed to, e.g., a wildebeest. No such restrictions apply to the indefinites in (2-a) and (2-b). I take this marked reading to be reflective of some sort of non-canonical operation taking place in (2-d). The movement of the indefinite in (2-a) and (2-b) is analyzed as optional A-movement (as argued for by Wurmbrand 2004) and does not have any effect on the information-structural properties of the sentence.

Further evidence for two *Mittelfeld*-subject positions comes from VP-topicalization. As it is well known, the first position (or *Vorfeld*) of the German declarative clause - normally associated with the SpecCP position - can be filled by any XP, including VP. It has been observed (Grewendorf 1989) that indefinite subjects can front with the VP while definite subjects cannot.



- (3) a. [Ein Bauchredner aufgetreten] ist bei der LSA noch nie.  
a ventriloquist performed is at the LSA never before  
'As far as ventriloquists are concerned, none has ever performed at the LSA.'
- b. ?[Ein Bauchredner einen Vortrag gehalten] hat bei der LSA noch  
a ventriloquist a talk given has at the LSA never  
nie.  
before  
'As far as ventriloquists are concerned, none has ever given a talk at the LSA.'
- c. \*[Der Bauchredner aufgetreten] ist bei der LSA noch nie.  
a ventriloquist performed is at the LSA never before  
'As far as the ventriloquist is concerned, he has never performed at the LSA.'
- d. \*[Der Bauchredner einen Vortrag gehalten] hat bei der LSA noch  
a ventriloquist a talk given has at the LSA never  
nie.  
before  
'As far as the ventriloquist is concerned, he has never given a talk at the LSA.'

It should be pointed out, especially in a dissertation like this one, that the judgments could be clearer with respect to (3-b) (see Hankamer & Schoenfeld 2005 for a semi-formal questionnaire based study on data of this kind). The unaccusative subject in (3-a) fronts the most easily, whereas the unergative subject in (3-b) is a little degraded.<sup>3</sup> Both, however, and that is the crucial point, are quite significantly better than (3-c) and (3-d) where the subject is a definite (the unaccusative/unergative contrast seems to go away as well).<sup>4</sup>

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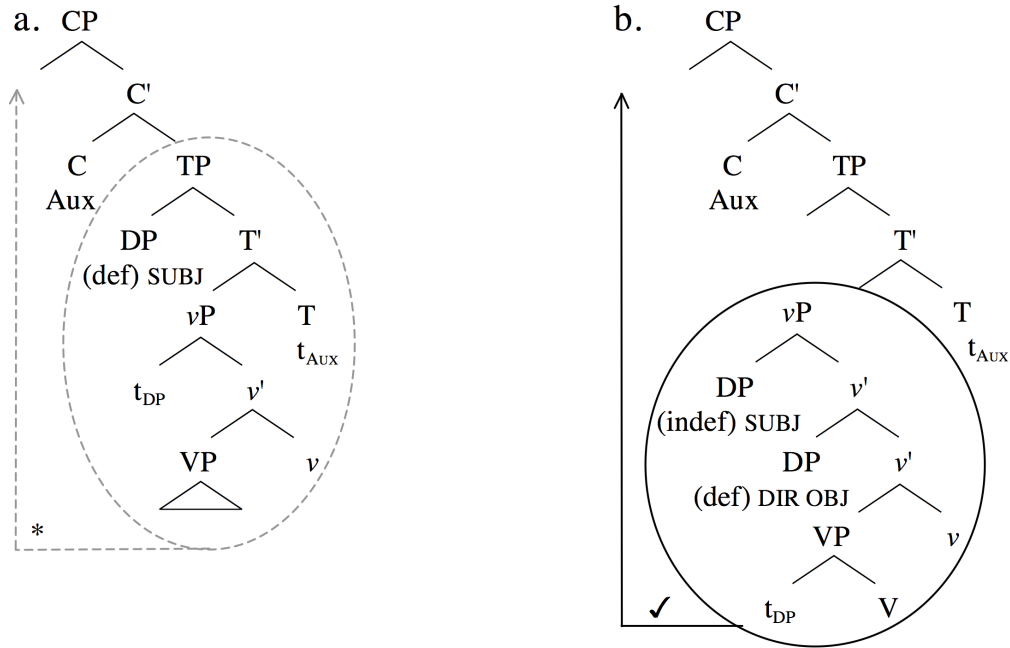
<sup>3</sup>If a contrast between (3-a) and (3-b) indeed exists and assuming that unergative subjects are in Spec*v*P, it could be proposed that VP fronts more easily than *v*P. This, however, would not fare well with Wurmbrand's (2004) account, summarized in the main text below. This question has to be left open until a proper investigation of the data is conducted.

<sup>4</sup>It should be noted that the definiteness restriction does not hold for objects, as (i) and (ii) show. This is evidence that the fronting restriction is not reducible to a general constraint on fronting VPs containing definite DPs.

- i. Einen Plenarvortrag gehalten hat der Bauchredner bei der LSA noch nie.  
a plenary.talk given has the ventriloquist at the LSA never before

Wurmbrand (2004) accounts for this contrast by assuming that only *v*P can front but not TP. She relates this proposal with Abel’s (2003) assumption that complements of phase heads cannot move. As a result, VP and TP cannot front, only *v*P can, as illustrated in (4).<sup>5</sup>

(4) Wurmbrand’s (2004) analysis of German *v*P -fronting



This account directly captures the data in (3). Definite subjects obligatorily raise to SpecTP and are no longer part of *v*P when the fronting operation applies. Indefinite subjects, on the other hand, can optionally stay in-situ and can be part of the fronted constituent.

These are only two among many others arguments presented in favor of two

- 
- ii. Den Plenarvortrag gehalten hat der Bauchredner bei der LSA noch nie.  
the plenary.talk given has the ventriloquist at the LSA never before  
‘As for a/the plenary talk, the ventriloquist never gave one/it at the LSA.’

<sup>5</sup>This analysis seems especially plausible with respect to TP. TP is already the complement of C, so movement of TP to SpecCP would amount to re-merging a phrase with the same head and thus blatantly violate anti-locality.

*Mittelfeld* subject positions in German (see Grewendorf 1989 for additional syntactic arguments and Diesing 1990, 1992 for semantic arguments). For the sake of completeness, we will briefly mention a slightly diverging point of view, advocated by Haider (1993). He claims that German has *eine einzige und VP-interne Subjektsposition* ('only one and VP-internal subject position', *my translation JJ*). The details of the wording here are important. Haider is in agreement with the majority position in the literature in that German has an overt VP (*vP*)-internal subject position. His claim diverges from the mainstream, however, in that he denies the existence of a VP-external subject position in the *Mittelfeld*, i.e. SpecTP. Haider directly criticizes the superimposition of English phrase structure rules onto German and argues against obligatory movement of the subject to SpecTP. We will side with him and the majority of the literature on this point. However, we will not agree with his contention that German essentially has a flat *Mittelfeld* with no TP-projection at all. He posits that the assumption that there is only a VP-internal subject position implies the following corollary:

Es gibt im Deutschen, *ceteris paribus*, keine durch die strukturelle Position bedingte Subjekt-Objekt-Asymmetrie hinsichtlich der Extraktionsdomänen zwischen Subjekten und Objekten. (*Ceteris paribus, German does not show structurally determined subject-object asymmetries with regards to the extraction domain between subjects and objects, my translation JJ*) (Haider 1993, p.150)

He then goes on to argue that this corollary is indeed borne out. However, both the logic and the empirical accuracy of this reasoning can be questioned. First, the assumption that being located within the same maximal projection solely determines whether subextraction is possible or not is highly theory-dependent. Even under a Barriers-style theory this would only be true if Government was defined in terms of m-command. V would then both govern its complement and its Spec. A definition of Government in terms of c-command would not give this result, as the specifier of VP is clearly not c-commanded by V. The same reasoning can be applied to

L-marking. If L-marking is tied to theta-marking (defined in terms of m-command) the argument goes through, otherwise it doesn't. M-command might ultimately turn out to be a relevant relation in the grammar but there is no a priori reason why we should assume it, yet it is crucial for Haider's corollary to go through.

Second, and this brings us directly back to the main theme of this dissertation, the claim that extraction out of VP-internal subjects and objects is equally acceptable does not hold up to close empirical scrutiny. We will return to the relevant examples and the treatment they received later in this section and in 3.2.<sup>6</sup>

Concluding our discussion of the subject in the German *Mittelfeld*, we assume for concreteness, and paralleling a standard analysis of the English clause that this derived position is SpecTP, but it could just as well be identified as SpecIP, SpecAgrP etc. Nothing hinges on this notational difference. What is crucial is that this position is a derived position external to VP (and *vP*), which a subject has overtly moved to. I will refer to this position as 'derived subject position'.

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<sup>6</sup>The only analysis of German that denies that indefinite subjects can remain VP (*vP*)-internal that I am aware of is due to Bobaljik & Jonas (1996). Extending their discussion of subjects in Icelandic, they claim that the subject positions in German are SpecAgrsP and SpecTP, i.e. both are outside VP and subjects in German can never remain in-situ. Their argument is based on the observation that the subject cannot possibly follow manner adverbs.

- i.     Es     essen Kinder   sorgfältig Äpfel.  
       there eat   children carefully apples  
       'There are children carefully eating apples.'
- ii.   \*Es     essen sorgfältig Kinder   Äpfel.  
       there eat   carefully children apples  
       'There are children carefully eating apples.'

While Bobaljik & Jonas's (BJ) observation is intriguing there are a number of reasons why I am not particularly worried about it. First, BJ themselves admit that 'various complications of course arise' but that 'the positions delineated by Diesing are at the very least amenable to the analysis we have proposed for Icelandic [...] since this is the claim the theory requires, it is the one we will adopt.' Second, Pure Manner Adverbs (Ernst 1984), such as *sorgfältig*, could plausibly be argued to be modifiers of VP rather than *vP*. The adverb would then be expected to follow even in-situ external subjects. While BJ's discussion is interesting, we take it to be a minority position and will follow the vast majority of the literature in assuming that subjects can in fact remain in-situ in German.

### 3.1.2.3 Internal and external subjects

Additionally, I am also distinguishing between internal and external subjects. This dichotomy goes back to Burzio (1981) and Williams (1981), who introduce the distinction between external and internal theta roles. Internal subjects standardly receive theme theta roles, and are the sole arguments of unaccusative and passive predicates. They are located in the complement position of V. External subjects are the subjects of unergative predicates and are taken to receive agent theta roles. What unifies them is that they can both be the *only* argument in a clause, they standardly receive nominative case (in nominative-accusative languages).

There is some controversy as to their exact structural position. Up to the mid eighties no distinction was made between external subjects and derived subjects. The standard subject position was the specifier of S. Early GB saw the advent of the VP-internal subject hypothesis (early references include Koopman & Sportiche 1985, 1991 and Kitagawa 1986, see McCloskey 1997:203ff. for a more detailed chronology). The external subject was now assumed to originate inside the VP in a position either identified as SpecVP or adjoined to VP (as in Koopman & Sportiche's original proposal).

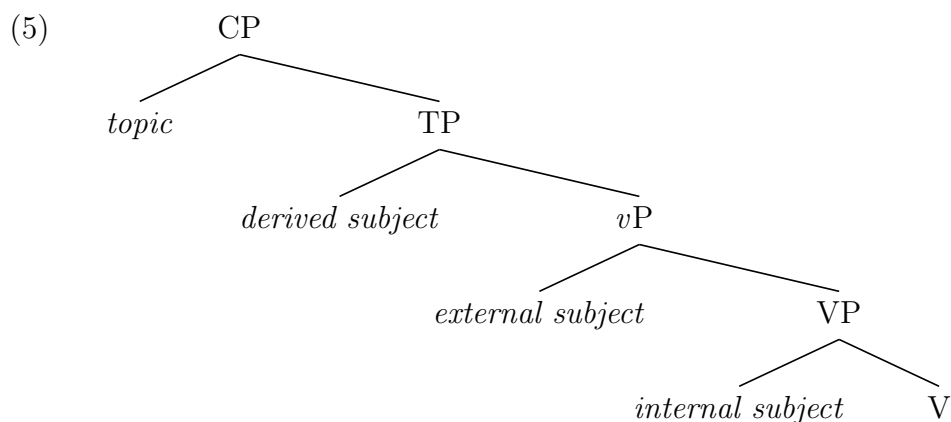
Under this early version of the VP-internal subject hypothesis, subjects and objects were taken to be dominated by the same maximal projection. Kratzer (1996), building on observations made by Marantz (1984), encodes the intuition that objects have a closer relationship with the verb than subjects and proposes to base-generate subjects in the Spec of a voice-projection, which takes VP as its complement. A similar approach was taken by Chomsky (1995), who generates external subjects in the Spec of *vP*. Following recent analyses of German phrase structure (Grewendorf 2002, Müller 2004, 2010) we identify the base position of the external subject as Spec*vP*. The reader should note, however, that Kratzer's SpecVoiceP or SpecVP<sup>7</sup>

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<sup>7</sup>It is less clear whether the external subject position could be associated with an adjunct

would be possible alternatives and compatible with the claims made throughout this thesis.

In this section we have summarized some of the standard assumptions made in the literature which lead us to the conclusion that German has four positions where subjects can appear in overt syntax: (i) a *topic position* in SpecCP, (ii) a *derived position* in SpecTP, (iii) an *external position* in SpecvP and (iv) an *internal position* as the complement of V. This is illustrated in the tree diagram in (5):



### 3.1.3 A brief history of German NP-subextraction

This section provides a brief overview of subextraction in German, focusing on the *was-für* split construction. Working through the literature on this topic can be somewhat dispiriting. While there is often great theoretical insight, there is also a remarkable lack of agreement on some of the key judgments. We will first discuss the data with the (sometimes contradictory) judgments as reported by the authors, setting the stage for more careful experimental investigations of the facts in the later sections of the chapter.

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position to VP, as Koopman & Sportiche's original proposal assumed. If that were the case we might expect, *ceteris paribus*, that extraction out of external subjects should be as degraded as extraction out of adjuncts. Our studies laid out in detail below rather suggest that subextraction out of external subjects has an intermediate status and is not as degraded as extraction out of adjuncts.

The *what for* construction is found in a number of Germanic languages including German, Dutch, Danish, Swedish, Norwegian and Yiddish. It is normally glossed as *what kind of NP*. What is relevant for our purposes here is that the construction has the property of allowing a split of the *what* and the *for NP* part, as illustrated in (6).

- (6) a. **Was für ein Schnitzel** hat der Hermes verspeist? [was-für ]  
 what for a schnitzel has the Hermes eaten.up  
 'What kind of schnitzel did Hermes eat up?'  
 b. **Was** hat der Hermes **für ein Schnitzel** verspeist? [was-für split ]  
 what has the Hermes for a schnitzel eaten.up  
 'What kind of schnitzel did Hermes eat up?'

While having received a considerable amount of attention on its own account (see Leu 2008 for an overview and references), *was-für* split is often used as a diagnostic for the islandhood of certain domains. While the details of the internal structure of the *was-für* phrase differ, virtually all analyses assume that genuine subextraction of the 'was' element has occurred. We will follow this majority position and use *was-für* split as our main diagnostic for testing the permeability of specific structural positions in German. *was-für* split has the advantage *vis à vis* subextraction of PP-complements out of NPs that the latter do not unambiguously indicate that actual extraction has taken place since German does not allow stranding the preposition. We will see in our discussion of PP subextraction in English in section 5.2 that pied-piping has a significant effect on the acceptability of subextraction, and we will conclude that only in the case of P-stranding did genuine extraction occur, while pied-piped PPs do not originate within the NPs. With *was-für* split this problem does not arise.

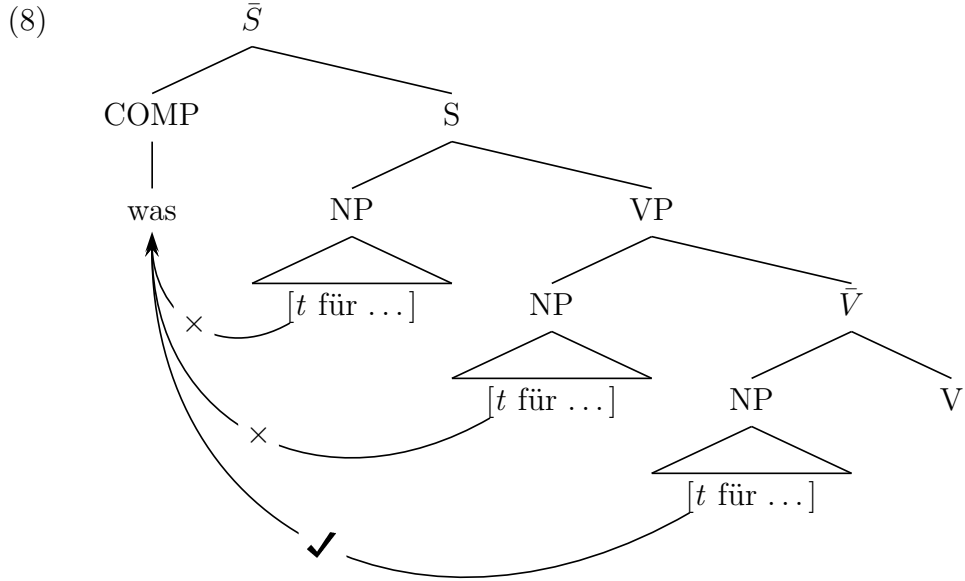
### 3.1.3.1 den Besten 1985

The discussion of *was-für* split in German is virtually synonymous with the discussion of NP-subextraction in general, as *was-für* split is *the* construction used to investigate subextraction domains. The first detailed investigation of in the generative literature goes back to den Besten (1985). He bases his discussion on the following data.

- (7) a. \*Was haben für Leute deine Mutter besucht? [subject]  
what have for people your mother visited  
'What kind of people visited your mother?'  
b. \*Was hast du für Leuten deinen Aufsatz geschickt? [indirect object]  
what have you for people your paper sent  
'What kind of people have you sent your paper to?'  
c. Was hast du in Italien für Museen besucht? [object]  
what have you in Italy for museums visited  
'What sort of museums did you visit in Italy?'  
d. Was sind gestern für merkwürdige Sachen passiert? [unaccusative]  
what are yesterday for weird things happened  
'What kind of weird things happened yesterday?'

He argues that the gap resulting from *was-für* split is only licensed when the *was-für* phrase is in the internal argument position, i.e. a complement of V. As a result, *was-für* split is allowed out of objects (7-c) and internal subjects, that is subjects of unaccusatives, (7-d), and passives, but not out of subjects of unergatives, (7-a), or out of indirect objects, (7-b). This is illustrated in (8) (den Besten's (39)):





How do den Besten's argument positions relate to the phrase structure given in (5)? He explicitly advocates for a VP-internal subject position. This position, however, is not identical to Koopman and Sportiche's VP-internal subject hypothesis but rather identifies the position of the arguments of unaccusatives and passives, i.e. our *internal subject* position (the complement of V). External arguments are not base-generated in VP but in SpecS, i.e. the notions *external subject* and *derived subject* are conflated. What appears to be SpecVP in (8) is in fact the position of the indirect object.

At the end of this chapter, after having gone through a series of experiments, we will conclude that den Besten's generalization is right on the mark. Essentially, we find a complement vs. everything else dichotomy. But first things first. We have to deal with the undeniable fact that den Besten's judgment's did not stand uncontested.

To my knowledge, no one questioned the acceptability of *was-für* split out of objects, but examples of both subextraction out of external subjects and indirect object are sometimes reported to be acceptable:

- (9) a. Was hast du für einem Buch einen Aufsatz zugefügt?  
 what have you for a.DAT book an article added  
 'What (kind of) book did you add an article to?'  
 [Bayer et al. 2001, ex. 42]
- b. Was hat sie für Leuten ein Buch gegeben?  
 what has she for people.DAT a book given  
 'What kind of people did she give a book to?'  
 [Lutz 2001, ex. 148b]
- c. Was hat ihn für ein Chefredakteur angerufen?  
 what has him for a.NOM chief.editor called  
 'What kind of chief editor called him?'  
 [Lutz 2001, ex. 148a]

(9-a) and (9-b) directly contradict (7), where virtually identical examples are reported to be unacceptable. So who's right? Or are both right and are we just looking at two different idiolects? The short answer is that this is a domain where informal introspective gathering of data will not suffice. The reader is referred to general problems with the informal acceptability judgments in section 2.2.

### 3.1.3.2 Melting

(9-c) is in conflict with (7-a), but differs from it in one interesting and very relevant respect. In the former the direct object has been scrambled across the subject that was extracted out of. This phenomenon has been dubbed *Melting* by Müller (2010), who reports that scrambling of an element unfreezes a certain domain (earlier discussion of this phenomenon goes back to Diesing 1990 and de Hoop 1996). Müller illustrates the contrast with the following examples:

- (10) a. \*Was haben denn für Leute den Fritz getroffen?  
           what have PRT for people the Fritz met  
           'What kind of people met Fritz?'  
       b. Was haben den Fritz<sub>i</sub> denn für Leute *t<sub>i</sub>* getroffen?  
           what have the Fritz PRT for people met  
           'What kind of people met Fritz?'  
           [Müller 2010, p.61]

Extraction out of external subjects is generally disallowed, as indicated in (10-a), but the subextraction can be salvaged by scrambling the direct object across the subject, as shown in (10-b). Müller aims at deriving CED effects from the Phase Impenetrability Condition (PIC) (Chomsky 2000). Given certain assumptions on the mechanics of feature checking and phases<sup>8</sup>, any XP that is the last element merged in a given phase should be an island for extraction. In (10-b), however, the object is moved to the edge of the *v*P phase, which effectively pushes the subject down one spot re-ranking it as the penultimate element of the phase. As a result, the subject ceases to be an island.

Müller's theoretical account and his prediction of Melting effects is intriguing, but it is not clear whether his effects hold as reported. We will return to the discussion of these effects and we will scrutinize the empirical accuracy of Melting in an experiment in section 3.5.

### 3.1.3.3 Diesing 1992

Müller's judgments, as he himself mentions in a footnote (p.68, fn.43), diverge from what Diesing (1990, 1992) reports. She lays emphasis on the importance of the subject's position for purposes of extractability by observing that splits from in-situ

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<sup>8</sup>Specifically, Müller stipulates that features on a head are ranked with respect to each other, that edge features triggering successive cyclic movement must be added before the phase head becomes inert, and that movement proceeds through the edge of every XP. The reader is referred to the paper for a detailed discussion about how these specific technical assumptions yield the desired results.

subjects are preferred over splits from moved subjects, as illustrated in (11) (Diesing 1990, p. 55 attributes this observation to Angelika Kratzer in class lectures of 1988):

- (11) a. Was haben denn für Ameisen einen Postbeamten gebissen?  
 What have PRT for ants a postman bitten  
 'What kind of ants bit the postman?'  
 b. \*Was haben für Ameisen denn einen Postbeamten gebissen?  
 What have for ants PRT a postman bitten  
 'What kind of ants bit the postman?'

Note that (11-a) and (10-a) are virtually identical examples, modulo the choice of lexical items. Yet they are given opposite judgments. Again we may ask: Who's right? Which judgment should we base our theory on? The answer again is that this a domain where our informal methods of gathering data crumble.

Returning to Diesing, we remind ourselves that an indefinite subject in German can either move to SpecTP or stay in situ in SpecvP, if the SpecCP position is filled by another element. The particle *denn* is used to demarcate the TP from the VP domain to determine the position of the subject. In (11-a) the subject remains in-situ and the split is judged acceptable, whereas in (11-b) the subject is moved and the example is unacceptable. Diesing concludes that Huang's CED only applies to subjects in SpecTP (derived subjects) while subjects in VP are not subject to the CED.

She provides an analysis in terms of a modified version of Chomsky's (1986) Barriers system. Concretely, Diesing stipulates that aspectual verbs like *have* (or German *haben*)  $\theta$ -mark and hence L-mark their complements. Furthermore, she makes the assumption that "if a head L-marks a maximal projection, it L-marks the specifier of that projection" (Diesing 1990, p.52).<sup>9</sup> As a result, both VP and the

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<sup>9</sup>A similar mechanism is considered by Chomsky and Koopman&Sportiche (1991) for case assignment with ECM predicates. This predicts, however, that the accusative marked thematic subject of the lower clause should be transparent for subextraction. Diesing (1990, p.86) claims that there is a small contrast between [i] and [ii], while conceding that [i] is still degraded.

subject in SpecVP are exempt from barrierhood and extraction is possible. TP, on the other hand, is not L-marked, and as a result the subject in SpecTP cannot inherit the L-marking status. Consequently, both TP and the Spec of TP are barriers (by virtue of being blocking categories) and extraction out of the subject in SpecTP is blocked.

There are number of comments and objections that need to be made at this point. First, Diesing’s analysis inherits all the well known problems associated with the Barriers system (see Lasnik&Saito 1992 for discussion). Second, she takes advantage of the rather vague definition of  $\theta$ -marking and extends it to what she calls ‘aspectual verbs’. If that were the case, we would expect this pattern of acceptability to be directly tied to the presence of an auxiliary verb. This is however not the case in the *was-für* split cases Diesing discusses:

- (12) a. Was beißen denn für Ameisen einen Postbeamten?  
 What bite PRT for ants a postman  
 ‘What kind of ants bit the postman?’  
 b. \*Was beißen für Ameisen denn einen Postbeamten?  
 What bite for ants PRT a postman  
 ‘What kind of ants bit the postman?’

The examples in (12) have the same status as Diesing’s in (11), as a controlled acceptability judgment study confirms<sup>10</sup>. To get the contrast in (12) we would have to modify Diesing’s proposal to allow for the VP to be L-marked by T across the board. It is left to the reader to decide how natural of an assumption that would be and how other islands phenomena could be covered if VP was generally exempted

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- i. ??Who do you believe pictures of to be on sale?  
 ii. \*Who are pictures of on sale?

Chomsky (2008) argues that [i] is in fact acceptable, diverging from Chomsky (1973) where both (i) and (ii) were deemed unacceptable. We will come back to this issue in detail in section 5.3 and conclude from an empirical study that both [i] and [ii] are equally degraded and that this is fully expected under a general theory of freezing.

<sup>10</sup>Data analysis in progress.

from barrierhood.

Ironically however, there is a set of examples not discussed by Diesing where the islandhood of a subject seems to exactly rely on the presence of an auxiliary. Extraction out of non-finite sentential subjects in German, as noted by Grewendorf (1989), improves when the V2 position is filled with an auxiliary as compared to a main verb. I will only mention these facts here and return to a detailed empirical and theoretical discussion in section 4.4.

- (13) a. Wessen Beispiele hat zu analysieren dich mehr frustriert - Haiders  
whose examples has to analyze you more frustrated - Haider's  
oder Sternefelds?  
or Sternefeld's  
'(\*?) Whose examples did it annoy you more to analyze - Haider's or  
Sternefeld's?'
- b. \*Wessen Beispiele frustrierte dich zu analysieren mehr - Haiders oder  
whose examples frustrated you to analyze more - Haider's or  
Sternefelds?  
Sternefeld's  
(\*?)'Whose examples did it annoy you more to analyze - Haider's or  
Sternefeld's?'
- [Grewendorf 1986, p. 66-67]

Returning to Diesing's account of the cases in (11), I have to conclude that her analysis is unsatisfactory. Kratzer's observation of the contrast between external and derived subjects is intriguing, and it is exactly the sort of contrast that led Stepanov (2007) to conclude that CED effects can be reduced to freezing effects. This is a reasonable conclusion based on the data he had at his disposal. I will show, however, in what follows that both den Besten and Diesing only present part of the facts and that a closer scrutiny of the data requires us to maintain a theory that accounts for complement/non-complement asymmetries as well as an explanation of freezing effects.

Table 3.1: Which domains allow subextraction in German?

	SpecTP	Indirect Object	SpecvP	internal argument
den Besten (1985)	N/A	*	*	✓
Diesing (1992)	*	N/A	✓	✓
Haider (1993)	N/A	✓	✓	✓
Lutz (2001)	N/A	✓	✓	✓
Müller (2010)	*	* <sup>1</sup>	* <sup>1</sup>	✓

<sup>1</sup> Only judged acceptable if another constituent has been scrambled across.

### 3.1.3.4 Conclusion

What have we learned from the discussion in this section? Clearly, there has been much insightful work on subextraction in German. Yet, the status of some of the crucial facts we are building our theories on remains unclear. The range of disagreements discussed in the last section are summarized in Table 3.1.

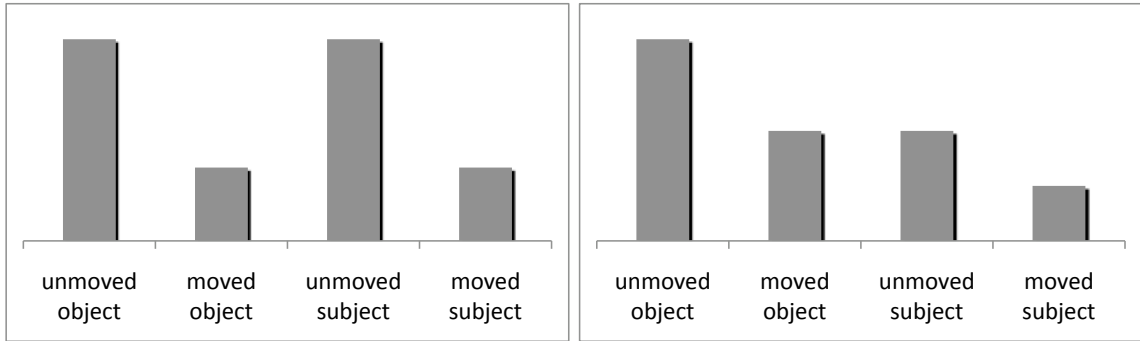
We see that there is conformity on the extreme sides of the scale: subextraction out of internal arguments is judged uniformly good while subextraction out of derived subjects is judged uniformly bad (by those authors that considered this case). Unfortunately, the clear cases also are the least theoretically controversial. Every theory I am aware of, both in terms of freezing and a theory in terms of CED-effects, makes the same predictions regarding these cases. The crucial examples involve subextraction out of external subjects and indirect objects.

## 3.2 Experiment 1 - External vs. derived subjects

### 3.2.1 Introduction

In our review of the theoretical work on constraints on subextraction in German we found the status of the empirical facts to be dissatisfying. The purpose of the

Figure 3.1: Predictions for subextraction out of subjects/objects: left 'pure freezing' predictions; right freezing and CED effects



following experiments is to collect more fine-grained data that will turn out to be decisive in the ongoing theoretical debates. We will start with the contrast between subextraction out of external subjects, derived subjects and out of objects, using *was-für* split .

### 3.2.2 Predictions

We saw above that Stepanov (2007) contends that subject island effects are reducible to freezing effects. If this is the case we would expect the data to show a split between extraction out of moved domains vs. extraction out of unmoved domains. In other words, we would not expect to find a main effect based on whether the extraction originated from a subject or from an object. However, that is exactly the prediction the CED would make. If, on top of that, Diesing's observation is correct in that there is an asymmetry between extraction out of in-situ vs. moved subjects, we would expect a three way distinction: extraction out of objects > extraction out of unmoved subjects > extraction out of moved subjects. These different predictions are schematized in Figure 3.1. The chart on the left shows the results that would be predicted by a freezing-only theory, i.e. if there is only a freezing effect but no subject/object asymmetry, and the chart on the right shows results that would be expected if there are two separate main effects.



### 3.2.3 Methodology

#### 3.2.3.1 Participants

32 self reported native speakers of German<sup>11</sup> participated in the experiment. The participation was unpaid and voluntary. 28 undergraduates at the University of Vienna with no training in formal syntax were asked to rate sentences presented to them in a paper questionnaire. 4 speakers did the experiment online. Alex Drummond kindly allowed me to use his webspr software (<http://code.google.com/p/webspr/>) and helped me with the set up code.<sup>12</sup> 1 speaker was filtered for not completing the questionnaire. The data of 31 participants was used for data analysis.

#### 3.2.3.2 Procedure

Participants were aware that they were taking part in a linguistics experiment, but were left uninformed about what was being tested. They were asked to rate sentences on a 7-point Likert scale according to their native speaker intuitions. The scale was anchored, i.e. participants were asked to give a 6 or a 7 to sentences they found perfectly acceptable, to give a 1 or a 2 to sentences they found completely unacceptable and to give 3 -5 to sentences they found not totally unacceptable but also not completely perfect. The reader is referred to the discussion in section 2.2.4 for reasons why a Likert scale was chosen over the Magnitude Estimation technique.

In the instructions for the experiments, it was emphasized that prescriptive rules and plausibility of the sentences were irrelevant for the experiment. Speakers

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<sup>11</sup>The large majority were speakers of Standard Austrian German. There was no motivation for this choice other than the fact that those speakers were most readily accessible. While it is possible that *was-für* split is not available to the same degree in every dialect of German, there is no reason to believe that the relative acceptability across the various conditions should differ.

<sup>12</sup>In all experiments except for this one his online software was used exclusively. This speeds up the data collection process significantly as compared to paper questionnaires and eliminates one potential source of human error, namely the investigator making mistakes copying the questionnaire results to an Excel sheet. Also, check out Alex Drummond's new and even more user-friendly interface *Ibexfarm* under <http://spellout.net/ibexfarm>.

were also given example sentences: one perfectly acceptable sentence (a regular wh-question) judged with a 7, one completely unacceptable sentence (a CSC violation) judged with a 1, and one intermediate sentence (a wh-island violation) judged with a 3. Participants also signed a statement indicating that they were over 18 years of age. They accepted that this experiment was not intended for their benefit but solely for research purposes, and it was made clear that their data was analyzed anonymously. See the Appendix for German, English, Japanese and Serbian versions of the instructions.<sup>13</sup>

### 3.2.3.3 Design

The experiment tested *was-für* split, manipulating the factors SUB/OBJ and MOVED/INSITU. 2 baseline conditions where not split takes place were added. This gives us the following 6 conditions.

- (14)
- a. Was für eine Ameise hat denn den Beamten gebissen? [sub, -split]  
 What for a ant has PRT the clerk bitten  
 'What kind of ant bit the clerk?'
  - b. Was für einen Beamten hat denn die Ameise gebissen? [obj, -split]  
 What for a clear has PRT the ant bitten  
 'What kind of clerk did the ant bite?'
  - c. Was hat denn für eine Ameise den Beamten gebissen? [in-situ sub, +spl]  
 What has PRT for an ant the clerk bitten  
 'What kind of ant bit the clerk?'
  - d. Was hat für eine Ameise denn den Beamten gebissen? [mvd sub, +spl]  
 What has for an ant PRT the clerk bitten  
 'What kind of ant bit the clerk?'
  - e. Was hat denn die Ameise für einen Beamten gebissen? [in-situ obj, +spl]  
 What has PRT the ant for a clerk bitten  
 'What kind of clerk did the ant bite?'
  - f. Was hat denn für einen Beamten die Ameise gebissen? [mvd obj, +spl]  
 What has PRT for a clerk the ant bitten  
 'What kind of clerk did the ant bite?'

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<sup>13</sup>Feel free to use for your own studies but please reference.

In (14-a) and (14-b) the entire *was-für* phrase is moved to the left periphery and no split takes place. In (14-c) *was* is extracted out of the in-situ subject, whereas in (14-d) it is extracted out of a moved subject position. Following Webelhuth (1989) and Diesing (1990, 1992), the particle *denn* ('indeed') is used to detect whether the subject is in its base or in a derived position (see sections 3.1.2 and 3.1.3 above for further discussion). In (14-e) the split originates from an unmoved object and in (14-f) *was* is moved out of an object in a derived position.

We created 3 lexicalizations. for each condition yielding 108 items total, which were distributed among 6 lists in a Latin Square design. This method makes sure that potential noise caused by specific lexicalizations is distributed across conditions and does not affect one condition disproportionately. The resulting 18 stimuli, together with 24 stimuli from a different experiment and 36 fillers of all levels of unacceptability<sup>14</sup> were pseudo-randomized. As a result each participant was presented with 78 sentences.

All predicates used were transitives. The complete list of items can be found in the appendix. It must be noted that animacy of the subject and object were not controlled for in the original experiment. A follow-up experiment was rerun to make sure that this is not a confounding factor. The follow-up experiment confirmed the results: All effects persist if animacy is controlled for. This is related to a point raised by Valentine Hacquard (p.c.), which is relevant for all acceptability judgment studies using *was-für* split . There is a sense in which it is not equally felicitous to ask a *was-für* question with any type of NP or in any kind of context. Hacquard points out that it might be stranger to ask about the type of clerk in ant biting incident than the type of clerk. I very much share this concern, which makes it all the more crucial to compare to always have control conditions where no *was-für*

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<sup>14</sup>We used finite sentential arguments varying the factors SUB/OBJ and EXTRACTION, Coordinate Structure Constraint (CSC) violations, complex NP islands, extraction across verba dicendi as well as regular wh-questions. See the appendix for a full list of fillers.

split takes place. Whatever the pragmatic oddity of inquiring the kind of a given NP, it will also show up in the control condition. There is no reason to believe that the split should increase this pragmatic effect. As we are only looking at the interaction effects, i.e. the relative decrease caused by *was-für* split, this pragmatic concern should not be an interfering factor.

### 3.2.4 Results

Our results show a pattern as expected under the CED. They do not pattern according to Stepanov's predictions. While Diesing's (1992) observation is confirmed that *was-für* split out of in-situ subjects is more acceptable than out of moved subjects (3.55 vs. 2.28,  $t(1,92)=5.2$ ,  $p<.001$ ), our data reveal another interesting pattern: extraction out of the in-situ subject is significantly degraded compared to in-situ objects ( $t(1,92)=11.2$ ,  $p<.001$ ), and extraction out of moved subjects is marginally degraded compared to unmoved subjects ( $t(1,92)=2.4$ ,  $p=.09$ ). Informally speaking, acceptability decreases when you extract out of a subject *or* when you extract from a moved domain. The effect is cumulative, i.e. extraction out of a moved subject leads to the worst results. This is summarized in Figure 3.2, the descriptive statistics in Table 3.2 and the ANOVA<sup>15</sup> data results in Table 3.3<sup>16</sup>.

#### 3.2.4.1 Distribution of the data

A common criticism brought up against acceptability judgment studies of this sort (e.g. Den Dikken et al. 2007) is that averaging the data of different speakers might obscure the fact that people have different grammars, i.e. different I-languages (cf.

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<sup>15</sup>It is sometimes pointed out that Likert scales yield non-parametric ordinal data, which is strictly speaking not amenable to ANOVAs, as ANOVAs assume normally distributed interval level data. However, it is a standard practise in much of the psychology literature to analyze this kind of data using ANOVAs, especially since no non-parametric tool of equivalent statistical power is available. We will follow this convention, acknowledging this caveat. See Sprouse (2007) for further discussion.

<sup>16</sup>For all ANOVA results a notational convention is used: \*\*\* =  $p < .001$ , \*\* =  $p < .01$

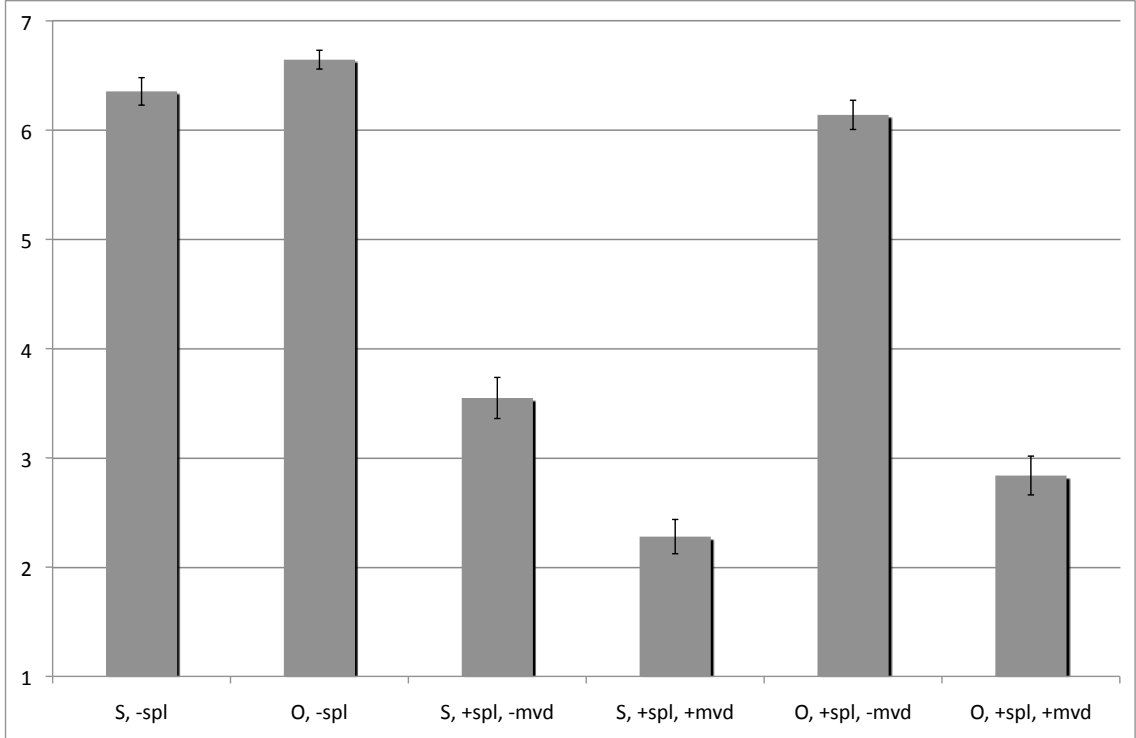


Figure 3.2: Experiment 1: Results

the discussion in section 2.2.1). While this is a *prima facie* possibility, it is not what a closer look at the data suggests.

The graph in Figure 3.3 presents the individual results for the relevant conditions of all 31 participants of the *was-für* split experiment. The black column to the left is the split out of the *unmoved object* condition, (14-e), the dark grey column in the middle presents the judgments for the *subject, in-situ* condition, (14-c), and the light grey column to the right is the *subject, moved* condition, (14-d). It is clearly visible that the overall pattern of acceptability is constant for a large majority of the participants. The judgments of 28 out of 31 (= 90.3%) speakers directly reflect the average pattern across speakers for the relevant conditions, i.e. extraction out of objects is preferred to extraction out of unmoved subjects, which is preferred to extraction out of moved subjects. For 3 speakers, extraction out of moved subjects was rated more acceptable than extraction out of unmoved subjects<sup>17</sup> and every

<sup>17</sup>It seems likely that these judgments are noise as a result of the fact that only three lexicaliza-

Table 3.2: Descriptive statistics

	Mean	SD
Sub, -split	6.35	1.21
Obj, -split	6.64	0.83
Sub, +insitu	3.55	1.81
Sub, -insitu	2.28	1.51
Obj, +insitu	6.14	1.29
Obj, -insitu	2.84	1.71

Table 3.3: ANOVA

	F	p
MOVED/INSITU	222.023	***
SUB/OBJ	113.554	***
SUB/OBJ X INSITU	44.906	***

speaker gave extraction out of objects the highest rating.

These results quite clearly go against the possibility that we are producing a meaningless average across different idiolects. The overall pattern is reflected in almost all individuals, which suggests that they all share the same grammatical constraints. The fact that the absolute numbers vary across speakers is not surprising at all. There is a considerable amount of inter-speaker variation, i.e. noise, which is due to a number of factors including the position of the stimulus within the experiment (beginning, middle or end and the adjacent items), which lexicalization of which condition<sup>18</sup> a speaker is presented with and the individual’s concentration span. In a different experiment multiple tokens of the same item were used and it was not uncommon that speakers gave varying judgments to identical stimuli. All of this points to the conclusion that the differences in absolute judgments we observe do not reflect differences in individual grammars, but are noise inherent to the task of making judgments.

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tions were given for each condition. Using 6 or even 9 lexicalizations is likely to further reduce the noise so that 100% of the speakers behave according to the overall pattern. However, given that the overwhelming majority of participants shows uniform behavior, this issue seems negligible.

<sup>18</sup>While every attempt was made to make all items similar in length and pragmatic plausibility, there is no guarantee that some lexicalizations of the same condition sound better to a speaker than others. The Latin square design makes sure that this does not disproportionately affect a single condition but only causes noise equally distributed across the conditions.

Figure 3.3: Experiment 1: Individual results of all 31 participants



### 3.2.5 Discussion

Our results are unsurprising in that they show that both subject and object questions without subextraction are rated as highly acceptable across the board. In addition, it comes as no surprise that we see some drop when the *was* is subextracted. Fronting the *was* on its own creates a filler-gap dependency, which is well known to yield an overall decrease in acceptability. The parser needs to store the filler in memory until it sees a gap site where it can be discharged. This increased processing load leads to a decrease in offline acceptability (cf. Gibson 1998).

The three-way distinction in extractability we find has gone undetected so far in the theoretical literature. It strongly suggests that not *one*, but *two* constraints are active in the grammar of German, which have to be held separately.

(15) **Constraints active in German**

- a. Extraction out of moved domains is degraded (= Freezing Effect)
- b. Extraction out of subjects is degraded (=Subject Condition)

What this experiment shows is that, crucially, (15-b) cannot be reduced to (15-a), contrary to Stepanov's claim. Moreover, the constraints are cumulative in the sense that violating both constraints, i.e. extracting out of moved subjects leads to the lowest acceptability. Extracting out of moved objects, violating (15-a) but not (15-b), receives the second lowest rating. Extracting out of unmoved subjects, violating (15-b) but not (15-a), is judged around 3.55, and extraction out of unmoved objects, violating neither (15-a) nor (15-b), receives the highest rating with 6.14.

We will show in section 3.6.2 how the subject/object asymmetry can be accounted for by Uriagereka's (1999) MSO theory. As we saw in section 2.1.2.1, it would also account for the decreased acceptability of extracting out of the moved object, (14-f), as the movement operation would essentially trigger the object to be



spelled-out before subextraction can take place. MSO has nothing to say about the difference between extraction out of moved vs. extraction out of in-situ subjects. There is no shame, however, in complementing it with a separate account of freezing effects, e.g. Takahashi (1994) or Hunter (2010). It seems plausible that the two separate effects we find have two independent sources.

### 3.2.5.1 Excluding extra-grammatical factors

The case made in section 2.2.4 was that parts of the gradience observed in acceptability judgments has its source in the grammar. How do we know that the effects observed in this experiment are of this kind? Let us take a closer look at the two key examples, *was-für* split from an in-situ subject in (14-c) and object in (14-e) (repeated here), and what differences we can detect other than the complement/non-complement asymmetry of the extraction site.

- (16)    a.    Was    hat denn für eine Ameise den Beamten gebissen?  
               What has PRT for an     the clerk     bitten  
               ‘What kind of ant bit the clerk?’  
               b.    Was    hat denn die Ameise für einen Beamten gebissen?  
               What has PRT the ant     for a     clerk     bitten  
               ‘What kind of clerk did the ant bite?’

(16-a) and (16-b) are exactly the same length, in fact they are composed of identical lexical items. The distance between the *wh*-filler and a gap is known to affect acceptability. Longer distance typically decreases the acceptability, as the parser needs to store the filler in memory longer (cf. Gibson 1998). Looking at the filler-gap distances in the examples at hand, we find exactly the opposite picture. No matter which metric of distance is employed (number of words, number of XPs, depth of embedding) the dependency in (16-b) is longer than in (16-a). Whatever the cost of dependency formation is, it is clearly outweighed by the grammatical

difference between subjects and objects.

Another factor that also goes in the opposite direction of the effects we find is a brief local ambiguity at *was*, which at this point could be a subject or an object wh-element, a wh-scope marker or part of *was-für* split.<sup>19</sup> This ambiguity is consistent across the conditions. The disambiguation and potential reanalysis has to take place at *für* which forces the *was-für* split parse, as *für*-PPs cannot appear in argument positions. If anything, this might cause a more significant problem in the object case as the disambiguating element appears later in the string. Whatever this cost is, it is again outweighed by the grammatical distinction. We conclude that both the distance of the filler-gap dependency and reanalysis, two well-known sources of decreased acceptability stemming from the parser, cannot be responsible for the acceptability pattern we see. Whatever cost they incur is easily outweighed by the grammatical differences.

Let us now turn to two potentially interfering factors that might skew the data in favor of object subextraction. One domain which is sometimes claimed to affect the acceptability of extraction is information structure. Let us look at one representative proposal. Goldberg (2006), pursuing the program of reanalysing island effects in purely extra-grammatical terms, offers the following explanation:

Elements in unbounded dependencies are positioned in discourse prominent slots. *It is pragmatically anomalous to treat an element at once backgrounded and discourse prominent.*

[Goldberg 2006, p. 135, original italics]

In other words, Goldberg suggests that A'-dependencies cannot originate in *topic* or *old information* domains. Lidz & Williams (2009, 184) point to two very obvious problems with this proposal. They note that relative clauses show the same island sensitivity as wh-clauses but no discourse prominence is associated with the relative clause head. This argument can easily be illustrated with a subject island violation.

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<sup>19</sup>In certain dialects of Southern German *was* could also be an adjunct question meaning 'why'.

- (17) a. I know the politician that John wrote a book about.  
 b. \*I know the politician that a book about caused a scandal.

Second, Lidz & Williams note that no pragmatic anomaly is associated with putting focused elements in presuppositional, i.e. backgrounded, contexts, as their example (12) shows.

- (18) I certainly did not read the book that CHOMSKY recommended.

Third, we can add to this the well known fact that wh-insitu languages allow wh-elements inside islands. The following example shows a wh-element in Japanese, which can appear inside a relative clause but cannot be scrambled out of it.<sup>20</sup>

- (19) a. Mary-wa [John-ga dare-ni ageta hon]-o hirotta-no?  
 Mary-top [John-nom who-Dat gave book]-Acc picked.up-Q  
 '(\* ) Mary pick up the book that John gave to who?'  
 b. \*Dare-ni mary-wa [john-ga t ageta hon]-o hirotta-no?  
 who-Dat Mary-top [John-nom gave book]-Acc picked.up-Q  
 '(\* ) Who did Mary pick up the book that John gave to?'

We conclude that Goldberg's analysis considerably undergenerates and cannot be maintained in its current form. For the sake of argument, however, let us assume that it is indeed true that for some poorly understood reasons constituents conveying new information allow extraction the most easily. Let us assume furthermore that elements occurring later in the string are canonically more likely to be interpreted as focus, whereas earlier constituents are canonically interpreted as topics. If all of these assumptions hold, this could be a potentially confounding factor and be (part of) the reason why speakers disprefer extraction out of subjects compared to objects.

Finally, (16-a) and (16-b) also differ with respect to the distance between the

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<sup>20</sup>Thanks to Maki Kishida for this example.

gap and the verb. The gap within the object is closer to the thematic verb than the gap within the subject, as the thematic information is coded in the participle which occurs in sentence final position. This could potentially lead to a processing advantage (cf. Gibson et al. 1996)

A skeptic may now interject that the differences in information structure and verb proximity might be an alternative explanation to the subject/object asymmetries we find. However, even though this is a logical possibility it seems highly unlikely, in particular given a number of follow-up studies indicating that complement/non-complement asymmetries persist even if the information structural position of the extraction site and the relative closeness between gap and the verb are varied. Here is a preview of pertinent findings from our follow-up experiments. The reader is referred to the respective sections for more detailed discussions:

- *was-für* split out of indirect objects and internal subjects in passivized ditransitive constructions again confirms a complement/noncomplement asymmetry. While there is a WORD ORDER main effect, i.e. the order DAT > NOM is preferred compared to NOM > DAT, there is no WORD ORDER x EXTRACTION interaction effect. In other words, only the structural properties of the extraction site affects the acceptability. Information structure and verb proximity to the gap have no effect: [section 3.3](#)
- Extraction out of subjects of unaccusatives is preferred to extraction out of subjects of intransitive unergatives. No obvious information structural differences between these two subjects can be detected: [section 3.4.2](#)
- Melting effects could not be replicated experimentally. As discussed in section 3.1.3.2, *was-für* split out of external subjects is sometimes claimed to improve by scrambling the object across the subject. Müller (2010) analyses this as a grammatical effect. It could also be argued that scrambling the object

alters the information structure such that the subject becomes more "focusy". However, we could not confirm the existence of melting effects experimentally: section 3.5

- Wh-extraction out of non-finite sentential arguments also shows subject/object asymmetries. Extraposing the sentential argument to a sentence-final position has no effect on the acceptability of the extraction. More technically, there is no interaction effect between the factors EXTRAPOSITION and EXTRACTION, even though extraposition normally places the sentential argument in a focus position: section 4.3
- Replacing the auxiliary in the V2 position with a main verb inverts the relative distance between the subject and the gap and the object and the gap. However, the acceptability pattern of subextraction is not affected in any way as a recent study suggests (data analysis in progress).

Given the vast empirical evidence, we will conclude that the island effects presented in this section and indeed throughout this dissertation deserve a grammatical account. Let us now turn to another issue, one that is commonly brought up when gradient data is subjected to an explanation in terms of a grammatical constraint.

### 3.2.5.2 Why are things as bad as they are but not worse?

We have made the case thus far that German does show CED effects. But an elephant is in the room. The CED has always been conceived as a binary constraint, so why is it the case that some speakers accept CED violations at all? In other words, why are some CED violations as bad as they are but not worse?

We already mentioned in section 2.2.4 one position that often seems to be assumed in the theoretical literature and is made explicit by Haider (1993). The logic goes as follows: a single instance of a violation of constraint X proves that constraint

X does not exist. This is an assumption we have already rejected. It presupposes a specific relation between grammaticality and acceptability, namely that violating a grammatical constraints always and necessarily leads to strong unacceptability. This is the necessary conclusion under the hypothesis that the grammar is strictly binary and the assumption that all gradience we observe stems from extra-grammatical factors.

However, where the gradience comes from is ultimately an empirical question. There is a tradition of a binary grammar, but there are also fully worked out theoretical models of gradient grammars (e.g. Keller 2000, Featherston 2005). The crucial point is that it is *not a contradiction in any way* that a sentence violates a grammatical constraint but still has a status of intermediate acceptability, rather than strong unacceptability. We simply do not know how a grammatical violation translates into an acceptability judgment.<sup>21</sup> Furthermore, we find that the two grammatical constraints, the CED on the one hand and freezing on the other hand, each individually decrease the acceptability of an example. If we put them together, the two violations cause a stronger decrease in acceptability than either one of them individually.

In interpreting the data we will proceed as follows: If we observe a difference in acceptability between two conditions in a carefully controlled experiment, and if we can beyond a reasonable doubt exclude extra-grammatical (parsing, information-structure) explanations for this difference, we will conclude that the difference in acceptability is caused by an underlying grammatical constraint. Of course, it is always an option to question whether all possible extra-grammatical factors have

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<sup>21</sup>It would be bizarre, of course, to postulate the violation of a grammatical constraint if we see no decrease in acceptability whatsoever. We never find this state of affairs in our experiments. That said, there are of course well-known cases of grammatical illusion, i.e. strings that are judged acceptable by speakers even in controlled experiments but turn out be meaningless upon further reflection. A famous case are comparative constructions like (i) *More people have been to Russia than I have..* We will not consider such cases in our discussion (see Phillips et al. to appear for a general overview of 'grammatical illusions' and Wellwood et al. 2009 for a lucid discussion of examples like (i))

been explored. Here explanatory parsimony comes into the picture as well. If a grammatical constraint X is well-known to hold in a large majority of languages and constructions, and if we observe an acceptability pattern predicted by X, it seems reasonable that this pattern is due to X. This is the much simpler conclusion as compared to arguing that, even though we see an acceptability pattern compatible with X, the difference in acceptability has another source and its correlation with X is purely coincidental. The burden of proof is on the skeptic.<sup>22</sup>

### 3.3 Experiment 2 - Passivized Ditransitives

#### 3.3.1 Background

Let us turn to our next experiment, which investigates the same questions looking at a different construction. Passivized ditransitives in German have the interesting property of surfacing with the unmarked word order indirect object (IO) > subject. Lenerz (1977:116) argues that the intransitive object needs to be contrastively focused in (20-b), while there is no such restriction for (20-a). Furthermore, only the word order IO > SUB can be felicitously uttered in an out-of-the-blue context, e.g. as an answer to the question *What happened?* .

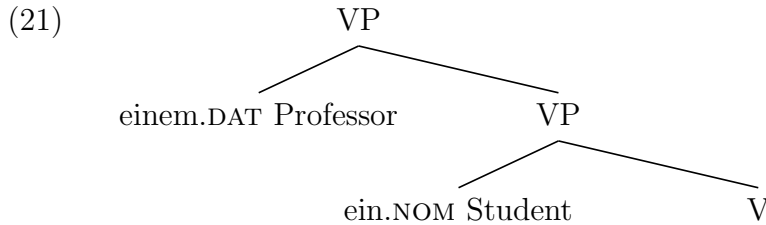
- (20) a. Ich weiß, dass einem Professor ein Student vorgestellt wurde.  
 I know that a.DAT professor a.NOM student introduced was  
 'I know that a student was introduced to a professor.'  
 b. Ich weiß, dass ein Student einem Professor vorgestellt wurde.  
 I know that a.NOM student a.DAT professor introduced was  
 'I know that a student was introduced to a PROFESSOR (not to the dean).'

Sabel (1999: 7ff.) convincingly argues that the nominative subject stays inside the

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<sup>22</sup>This is essentially, albeit phrased in slightly different terms, the same conclusion reached by Featherston (2005a,b) for the *that*-trace effect and Superiority in German.

VP. He proposes the following structure:



Sabel argues based control and binding data that the nominative marked NP can stay in its in-situ position in German, i.e. as the complement of V. Recall from our discussion in section 3.1.2.3 that, unlike English, German does not obligatorily require internal arguments to raise to SpecTP to receive nominative case. Case assignment can take place in-situ (see Wurmbrand 2006 for a proposal of the mechanism of case assignment in German). Sabel assumes the IO to be adjoined to VP but see the discussion section below for alternative proposals.

We will compare extraction out of in-situ subjects and indirect objects. Furthermore, we will manipulate the word order to see whether the acceptability of subextraction out of an argument is affected by the position of this constituent relative to the other argument. In particular, this allows us to test a potential alternative analysis of the findings in 3.2, in terms of information structural role or verb proximity. Let us first take a look at the stimuli before considering the various predictions

### 3.3.2 Methodology and Design

23 native speakers of German participated in this online study. The methodological protocol laid out in section 3.2 was followed. The study test *was-für* split, manipulating the factors WORD ORDER and SUB/IO. Two baseline conditions without extraction were added. This yields the following set of stimuli.<sup>23</sup>

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<sup>23</sup>The experiment in fact also included two Across-the-Board *was-für* split conditions, i.e. 8 conditions total. We will only present the first 6 conditions here and discuss ATB-*was-für* split in



- (22)
- a. Gestern wurde einem Professor ein Student vorgestellt.  
yesterday was a.DAT professor a.NOM student introduced  
'Yesterday a student was introduced to a professor.' [O>S, -ext]
  - b. Gestern wurde ein Student einem Professor vorgestellt.  
yesterday was a.NOM student a.DAT professor introduced  
'Yesterday it was a professor a student was introduced to.' [S>O, -ext]
  - c. Was wurde denn einem Professor für ein Student vorgestellt?  
what was PRT a.DAT professor for a.NOM student introduced  
'What kind of student was a professor introduced to?' [O>S<sub>[t]</sub>]
  - d. Was wurde denn für einem Professor ein Student vorgestellt?  
what was PRT for a.DAT professor a.NOM student introduced  
'What kind of professor was a student introduced to?' [O<sub>[t]</sub>>S]
  - e. Was wurde denn für ein Student einem Professor vorgestellt?  
what was PRT for a.NOM student a.DAT professor introduced  
'What kind of student was a professor introduced to?' [S<sub>[t]</sub>>O]
  - f. Was wurde denn ein Student für einem Professor vorgestellt?  
what was PRT a.NOM student for a.DAT professor introduced  
'What kind of professor was a student introduced to?' [S>O<sub>[t]</sub>]

3 lexicalizations for each condition were created, yielding a total of 108 items, which were grouped in six Latin-squared lists. The resulting 18 stimuli together with 43 items from different experiments and 23 fillers were presented in pseudo-randomized order.

Only indefinite animate NPs were used for both subjects and indirect objects in all conditions. Again the modal particle 'denn' was used to demarcate the *vP*-boundary. (22-a) and (22-b) serve as base line conditions to gauge how much the marked word order influences the acceptability. In (22-c) *was-für* split takes places from the internal subject position, and in (22-d) the split originates from the IO position, in both cases with the unmarked word order IO > SUB. In (22-e) and (22-f) we again extract out of the internal subject and the IO, this time using the

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section 3.7. See the appendix for the full list of items.

marked word order SUB > IO.

### 3.3.3 Results

We found that there is a marginally significant main effect for the factor WORD ORDER, i.e. speakers slightly prefer the unmarked word order IO > SUB over the marked word order SUB > IO. This does not considerably affect the acceptability of the no-extraction condition, (22-b), which is still given a very high rating (5.68). A pairwise comparison shows that the difference between the baseline conditions is not significant ( $t(1,68)=.27, p=.13$ ). We see EXTRACTION main effects for both *was-für* split out of subjects and out of IOs, but there is a significant asymmetry between the two. While *was-für* split out of the subject, (22-c), still yields intermediate ratings (3.57), extraction out of IOs, (22-d), receives a much lower rating (2.01) (pairwise comparison:  $t(1,68)=5.33, p<.001$ ). Combining extraction and marked word order further decreases the acceptability (3.06 vs. 1.72,  $t(1,68)=5.12, p<.001$ ). It is interesting to note, however, that the effects do not seem to be cumulative in this case in that there is no interaction effect for SUB\*MARKED or IO\*MARKED. In other words, there is a difference in absolute numbers between extraction out of subjects and IOs with SUB > IO word order compared to IO > SUB order, but this difference stems solely from the marked word order main effect. The results are summarized in Figure 3.4, the descriptive statistics in Table 3.4 and the ANOVA results in Table 3.5.

### 3.3.4 Discussion

#### 3.3.4.1 How to interpret Likert-scale results

Before we delve into the details of the analysis and the theoretical implications of these results one methodological point needs to be clarified. It is immediately notice-

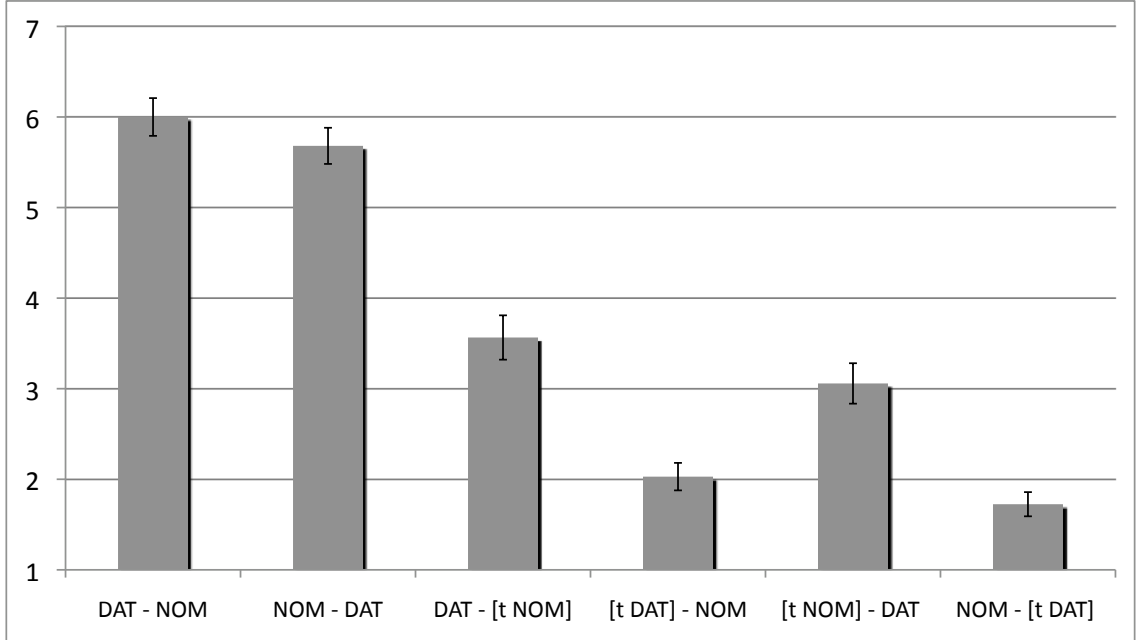


Figure 3.4: Experiment 2: Means

Table 3.4: Descriptive Statistics

	Mean	SD
Dat > Nom	6.00	1.73
Nom > Dat	5.68	1.66
Dat > [t Nom]	3.57	2.03
[t Dat] > Nom	2.01	1.26
[t Nom] > Dat	3.06	1.85
Nom > [t Dat]	1.72	1.11

Table 3.5: ANOVA

	F	p
SUB	76.1	***
IO	330.1	***
SUB*IO	166.1	***
SCR	8.9	**
SUB*SCR	.1	.912
IO*SCR	1.1	.317

able that the means of the *was-für* split condition are lower compared to Experiment 1 across the board. This is a good spot to remind ourselves of a very important fact about acceptability judgment data. We should never draw any significant conclusions from the absolute rating we get for a condition. This might sound odd since the scale is anchored, that is the various points translate to a statement about a speaker’s intuition, e.g. *rate a sentence with 7 if you find it fully acceptable*. This is certainly true, and there is a sense in which there is some meaning to the absolute values. If, for instance, a sentence like *What did you see?* receives a rating around 2, we know that there is something fundamentally wrong with our experiment. At

the same time, however, we should not be too worried if it is judged around 5 on a 7-point scale. Many factors influence the absolute ratings.

One major factor are the other items that appear in the questionnaire (fillers and items from other experiments), which strongly bias the ratings. People are affected by the context in which they are asked to give a judgment. A sentence like *What did you see?* is likely to get a rating higher than 6 if the majority of the items in the same questionnaire include strong violations (strong islands, agreement mismatches, etc.). The same sentence might be rated only around 5 if the majority of fillers are simple monoclausal declaratives that do not contain any violations.

It also seems to be a fact about Likert scales in general and not particular to acceptability judgments that many participants have a tendency to not use the extremes of the scale (i.e. giving 1s or 7s). This might be related to the eagerness of some participants to leave themselves the option of giving even stronger ratings in case of even more extreme items. These points make it methodologically questionable to compare ratings across various experiments. Too many factors could differ, above all the fillers and the participants.

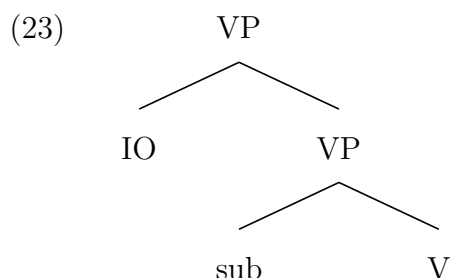
The bottom line is that substantial claims can only be made about the relative difference between two conditions that differ minimally in the effect under investigation and appear in the same questionnaire. We are concerned with relative judgments exclusively, not absolute judgments. It does not make sense to say: a sentence is ungrammatical below a value X, above X it is grammatical.

#### 3.3.4.2 Analysis of the effects

Let us return to our experiment. We saw above that all NPs in the stimuli were controlled for animacy and definiteness. This is crucial to preclude word order biases that are well known to be triggered by these factors (see Lenerz 1977, Müller 1999 among others). However, definiteness especially can play a key role in the overall

decreased acceptability of the *was-für* split conditions. It seems that, for reasons that are not totally lucid, *was-für* split is preferred when the other NP in the clause is definite. This, however, affects all subextraction conditions across the board and does not bias one condition disproportionately.

With all of these caveats in mind, let us look at our findings. There is a clear asymmetry in acceptability between *was-für* split out of subjects and indirect objects. This is not a surprise if Sabel’s (1999) structure, repeated here, is correct:

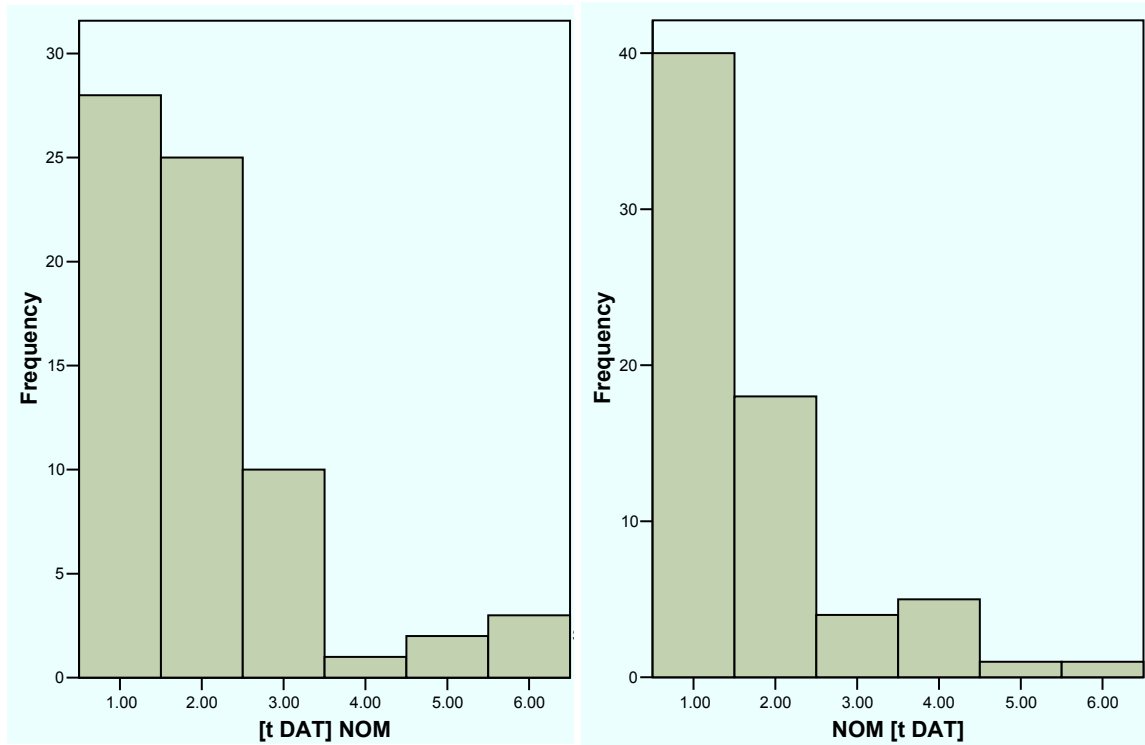


The nominative marked NP, the internal subject, is in the complement position of V and as such expected to allow extraction. Our findings also confirm Den Besten’s (1985) original insight that IOs do not allow subextraction. The isolated examples in Bayer et al. (2001) and Lutz (2001) (cf. the discussion section 3.1.3) strongly diverge from the means and are clearly a minority view. It is very unlikely that the mean is indicative of a cleft between the speakers, with some accepting the extraction while others do not.<sup>24</sup> This is illustrated by the histograms in Figure 3.5. The histogram on the left represents all ratings for subextraction out of IO with the IO > SUB order, and the chart on the right with the SUB > IO. Bayer et al.’s and Lutz’s judgments are certainly outliers.

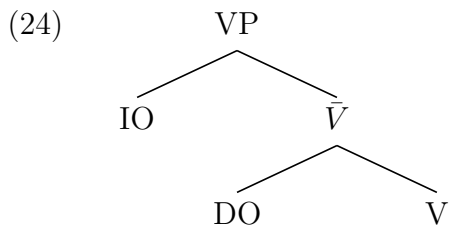
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<sup>24</sup>Note that we did not test the exact examples Bayer et al.’s and Lutz’s used. While their examples were in active voice, we used passives. Melchior (2007) looked at active sentences and found a similar picture: extraction out of indirect objects is strongly degraded, in contrast to Bayer et al.’s and Lutz’s judgments. This makes it unlikely that passive voice and the availability of extraction out of indirect objects interacts in some way. What is more plausible is that passive voice has a certain effect on the judgments across the board. as we will see in Experiment 3 below. We do not expect any more or less severed effect on indirect objects.

Figure 3.5: Subextraction out of IOs - individual distribution



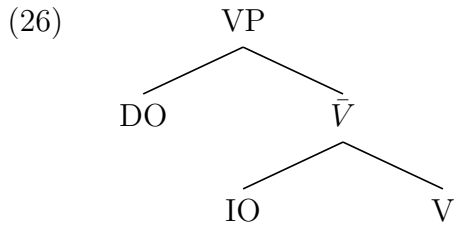
What does the CED have to say about the islandhood of IOs? If we assume that DOs are merged in a complement position, no matter which other position IOs are merged in they would always constitute opaque domains, irrespective whether they are analysed as adjuncts to VP or specifiers of some sort. Our results are compatible with a structure such as the one given initially by Müller (1995: 186), assuming as we have been so far that nominative marked themes in passives occupy the same position as DOs:



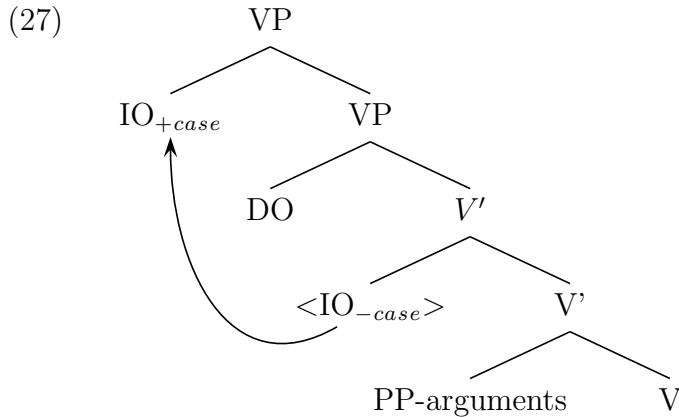
Grewendorf (1988), however, argues based on the following binding data that the DO asymmetrically c-commands the IO:

- (25) a. Der Arzt zeigte den Patienten<sub>j</sub> sich<sub>j</sub>/\*ihn<sub>j</sub> im Spiegel  
the doctor showed the patient.acc himself/him in.the mirror  
b. Der Arzt zeigte dem Patienten<sub>j</sub> ihn<sub>j</sub>/\*sich<sub>j</sub> im Spiegel  
the doctor showed the patient.DAT him/himself in.the mirror

The anaphor in the IO position can be bound by the DO but not vice-versa. This data seems to suggest a structure like (26):



Müller acknowledges Grewendorf's data and tries to reconcile (24) and (26) by assuming that the IO is asymmetrically c-command in its based position by the DO but the IO moves across to DO to a higher position to get case, as illustrated in (27):



This structure is strikingly similar to Larson's (1988) analysis of double object construction in English and Baker's (1988) UTAH. If that is the correct structure the CED would predict both IOs and DOs to be islands. Perhaps this structure is compatible with our results, as both extraction out of IOs and internal arguments

are degraded to a certain extent. The asymmetry between the two could then be construed as a freezing effect, as the IO raises overtly for case reasons.

However, I do not think that this is the right conclusion to draw. First, Grewendorf's data that prompted a structure such as (27) does not seem to hold up. Featherston (2002) runs a detailed acceptability judgment study indicating that Grewendorf's binding data does not hold up. Speakers judge reflexives more acceptable than pronouns across the board with both dative and accusative antecedents. I personally do not share Grewendorf's judgments in (25) either. In addition, Featherston reports the same effect in word order preference  $IO > DO$  vs.  $DO > IO$  we also found. We will not try to give a full-fledged account of German binding here. What is crucial is that the key data in favor of an hierarchy where the DO asymmetrically c-commands the IO does not seem to hold empirically.<sup>25</sup>

Our results might be interpreted as being reflective of a structure such as (27). In that case, extraction out of the subject would be a mere CED violation while extraction out of the IO would be a CED *and* a freezing violation. However, we saw above that absolute ratings should generally not be used to draw conclusions of any kind. Only relative judgments can be interpreted in a meaningful way. As such, the fact that extraction out of internal arguments is given a score of 3.57 does not imply that any grammatical principle is violated. The general cost incurred by *was-für* split combined with the cost of passivisation is more likely to be the culprit for the decreased score. As such, our results are fully compatible with a simpler structure such as (24).

Ultimately, these cases raise questions about the thematic hierarchy, i.e. whether DOs or IOs are closer to the verb. Our results point to the conclusion that DOs are complements of the verb, whereas IO are in some higher non-complement position.

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<sup>25</sup>The relevance of the binding data is theory dependent, to begin with, as Norbert Hornstein (p.c.) points out. In a theory such as Reinhart & Reuland (1993), it is not clear that the c-command relations play any role for establishing licit binding relations.



Another interesting follow-up question arises for 'persuade' type constructions which both take a DO and a CP-complement. Does the DO allow subextraction even when a CP-complement is present or does the CP occupy the complement position of V, which results in the DO showing CED effects? The relevant comparison would be the following:<sup>26</sup>

- (28) a. ?Was hat der Peter für einen Mann überredet einen Marathon zu  
           what has the Peter for a.ACC man persuaded a marathon to  
           laufen?  
           run  
           'What kind of man did Peter persuade to run a marathon?'  
       b. Was hat der Peter für einen Mann gesehen?  
           what has the Peter for a.ACC man seen  
           'What kind of man did Peter see?'

To my ear, (28-a) sounds a little degraded compared to (28-b). This would suggest that the CP in fact occupies the complement position of V and the DO is located in some other non-complement position. The contrast in acceptability, however, is not robust enough to jump to any conclusions based on it. A controlled acceptability judgment study would be needed, a task left for future research.

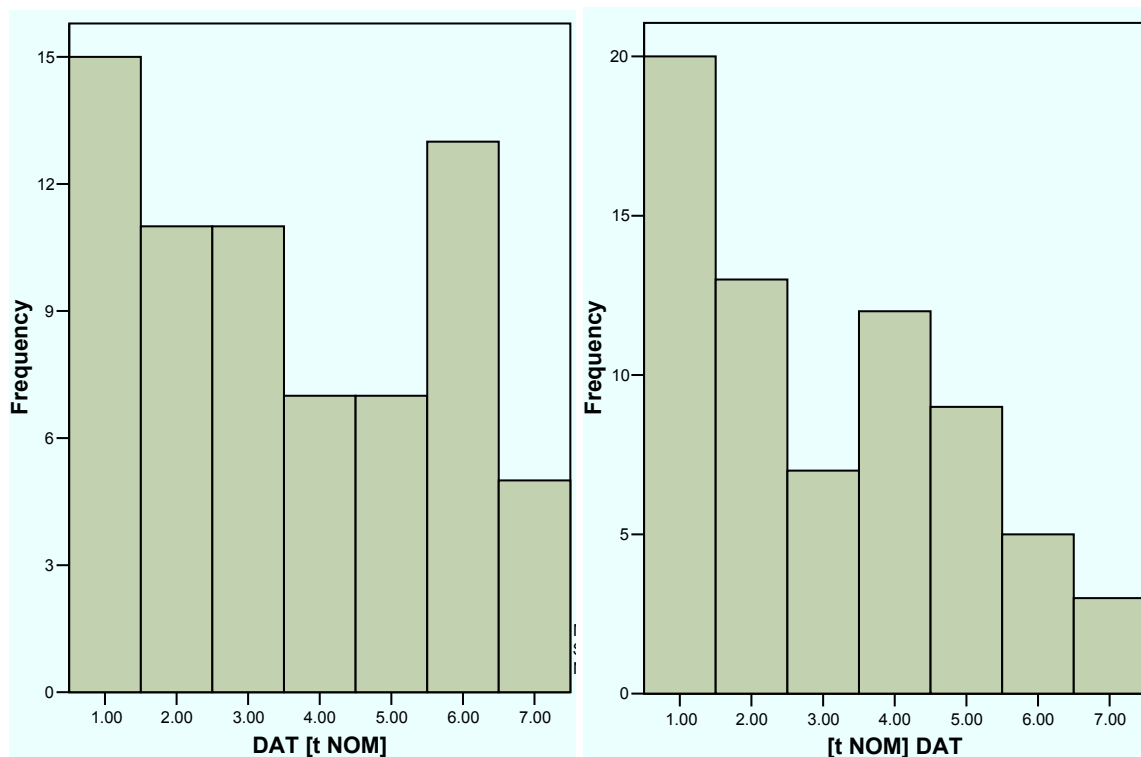
Let us now have a closer look at extraction out of internal subjects. While it is significantly more acceptable than extraction out of indirect objects, speakers do not seem to behave uniformly. This is illustrated in Figure 3.6.

The chart on the left indicates the distribution of subextraction out of internal subjects with a IO > SUB word order and the chart on the right with a SUB > IO word order. Let us first focus on the former. The distribution approximates bimodal

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<sup>26</sup>The same kind of comparison can be constructed for English too: (i) ?Who did you persuade a friend of to run a marathon? vs. (ii) ?Who did you meet a friend of?. The judgments are not crystal-clear. Extraction out of animate DPs is already degraded in English for many speakers, but it is conceivable that we would still find a further contrast between (i) and (ii) on top of that. A relatively straightforward experiment could give an answer. Since there are just too many relatively straightforward (and less straightforward) experiments to run, I will have to leave this open for future research.

Figure 3.6: Individual distribution



behavior. Speakers both reject *and* accept the extraction a good percentage of the time. There could be a number of reasons for this trend. First, as mentioned above, speakers tend to disprefer *was-für* split in contexts where all NPs in the clause are indefinites. This is very unlikely to stem from a grammatical constraint but seems more likely to have a motivation rooted in information structure. Informally speaking, it might be somewhat odd to inquire about *the kind of* some NP while not singling out another participant of the event. You can mimic this effect in English:

(29) What kind of man did a woman meet?

While (29) is certainly not ungrammatical, there is some degree of oddity involved. Different speakers are likely to be more or less skillful in creating a plausible pragmatic situation for such an utterance, and hence some might reject it for that reason.

Second, there are two potential structures that could be assigned to (22-c).

- (30) a. dass [<sub>VP</sub> einem Professor [<sub>V'</sub> ein Student vorgestellt]] wurde  
 b. dass [<sub>TP</sub> einem Professor<sub>i</sub> [<sub>TP</sub> ein Student<sub>j</sub>] [<sub>VP</sub> *t<sub>i</sub>* *t<sub>j</sub>* vorgestellt]] wurde

In (30-a) both the internal subject and the indirect object are in-situ. In (30-b) the subject is moved to the derived subject position in SpecTP and the indirect object is scrambled across it, adjoining to TP. Sabel (1999), discussing this construction in detail, proposes the structure in (30-a). He concedes, however, that there is no way to test empirically whether the IO vacuously scrambled higher to adjoin to TP. He discards this possibility on theoretical grounds, making the plausible minimalist assumption that vacuous movement (i.e. movement with no effect at PF or LF) is disallowed. It is still conceivable that speakers assigned different structures to the same string. This would explain the bimodal distribution. For the former group, the internal subject would remain in its in-situ position as the complement of V and as such be transparent for extraction. For the later group, the degradation of the example would be a result of freezing, similar to what we found in Experiment 1. Note, however, that I am not aware of any theory that proposes this kind of vacuous movement. It is only a theoretical possibility, albeit not a particularly plausible one.

Alternatively, it could turn out that some speakers assign these cases a representation such as (24) and others the one in (27). Ultimately, this particular experiment cannot give us a sufficiently satisfying answer to this question. We will investigate extraction out of internal and external arguments in detail in Experiment 3 and 4, in sections 3.4 and 3.5, respectively.

In addition, we confirm the intuition that IO > SUB is the preferred word order for passivized ditransitives. There is a significant WORD ORDER main effect. This trend also shows up in the non-extraction conditions but fails to reach significance in the pairwise comparison. Interestingly, there is no WORD ORDER x EXTRACTION interaction effect, neither for subjects nor for objects. Importantly, we find that

the acceptability of the extraction solely depends on the syntax of the extraction site and cannot be explained by an account in terms of processing or information structure. If we control for the word order main effect, the position of the gap in the string does not affect the acceptability. Subjects and indirect objects show the same asymmetry no matter in which linear order they surface, as indicated by the lack of interaction effects for SUB\*SCR and IO\*SCR in table 3.5. If verb proximity or topichood were the only factors that govern extractability, we would expect them to show up in our data.<sup>27</sup>

### 3.3.5 Conclusion

Summarizing the findings of this chapter, we saw that extraction out of indirect objects is strongly degraded for virtually all speakers, contrary to some claims in the theoretical literature. This is expected from the CED if IOs are not complements of V. Additionally, we got mixed results for extraction out of internal subjects, a topic to which we will return promptly and in much more detail in Experiments 3 and 4. Finally, our data gives us good reasons to believe that the extraction asymmetries we find cannot be reduced to extra-grammatical factors.

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<sup>27</sup>Den Besten's (1985) original insight that IOs do not allow *was-für* split is confirmed. However, in his assessment that there is an asymmetry between extracting out of in-situ vs. moved subjects, he fails to control for the marked word order main effect. He judges examples like (22-c) as fully acceptable while ruling out examples like (22-e). This seems like a mischaracterization of the facts, stemming from the bias of binary categoricity and the lack of more rigid data collection.

## 3.4 Experiment 3 - Internal and external arguments

### 3.4.1 Experiment 3A

#### 3.4.1.1 Introduction

This study follows up on the findings in Experiment 1 and 2 by comparing *was-für* split out of internal and external arguments. Concretely, we will contrast subextraction out of in-situ subjects of unergatives, unaccusatives and passives as well as out of objects. At this point, the predictions should be clear. The CED predicts that internal arguments, i.e. unaccusative and passive subjects and objects, should show uniform behavior while extraction out of unergative subjects should be degraded. This is roughly the picture that emerges.

#### 3.4.1.2 Methodology and Design

37 native speakers of German (by self-assessment) with no prior training in linguistics, predominately speakers of Austrian German, were asked to rate sentences on a 7-point Likert scale presented to them in an online questionnaire. The data of all 37 participants was used for data analysis. The same methodological protocol outlined in 2.2.2 and in the previous experiments was followed.

The experiment had a 5x2 structure with the independent variables ARGUMENT TYPE and EXTRACTION. We constructed examples of *was-für* split out of subjects of unaccusatives, passives, and objects as well as out of the intransitive and transitive unergative subjects. For each predicate type we added a control condition where no split takes places. Again, an adverbial marker was used to demarcate the *vP* boundary. This results in 10 conditions. The following shows the 5 *+extraction* conditions, the control conditions are parallel with the entire *was-für* phrase fronted.

- (31) a. Ich frage mich, was für ein Mann gestern am Nachmittag  
 I ask myself what for a man yesterday on.the afternoon  
 erschienen ist.  
 appeared is.  
 'I wonder what kind of man appeared yesterday afternoon.' [unacc]
- b. Ich frage mich, was der Mann gestern am Nachmittag für einen  
 I ask myself what the man yesterday on.the afternoon for a  
 Piloten gesehen hat.  
 pilot seen has  
 'I wonder what kind of pilot the man saw yesterday afternoon.' [obj]
- c. Ich frage mich, was gestern am Nachmittag für ein Mann gesehen  
 I ask myself what yesterday on.the afternoon for a man seen  
 wurde.  
 was  
 'I wonder what kind of man was seen yesterday afternoon.' [pass]
- d. Ich frage mich, was gestern am Nachmittag für ein Mann den  
 I ask myself what yesterday on.the afternoon for a man the  
 Piloten gesehen hat  
 pilot seen has  
 'I wonder what kind of man saw the pilot yesterday afternoon.' [trans]
- e. Ich frage mich, was für ein Mann gestern am Nachmittag  
 I ask myself what yesterday on.the afternoon for a man  
 geschlafen hat.  
 slept has  
 'I wonder what kind of man slept yesterday afternoon.'" [unerg]

3 lexicalizations of every condition were created. The same verbs were used for the transitive, object and passive conditions. Different verbs had to be used in the unergative and unaccusative conditions. Note that I selected the unergative and unaccusative predicates solely based on which auxiliary they selected. This might have been a too simplistic metric, even more so, in light of Sorace's (2000) discussion of the unaccusative-unergative continuum. The distinction between the two types does not seem fully binary, but there is a sense in which one verb can be more unaccusative than another one but still less unaccusative than a third one. We will return to this issue in the discussion section below, and we will conduct a follow-up study using only extreme cases on the scale in Experiment 3B below.

### 3.4.1.3 Results

Our results indicate that two things matter: whether a predicate has one or two arguments and whether the extraction originates from an internal or external argument position. Extraction out of objects, (31-b), is preferred to extraction out of transitive subjects, (31-d) (4.36 vs. 3.51,  $t(1,110)=3.49$ ,  $p<.001$ ). Objects and transitives have the lowest values for the *-extraction* control condition. This seems to be a direct reflection of the fact that these are the conditions with two overt arguments. The fact that an additional  $\theta$ -role needs to be assigned is burdensome to the parser and causes a decrease in acceptability. Unaccusatives, passives and unergatives show virtually identical values for the control condition.

What about the effect of *was-für* split ? The best cases of extraction are out of unaccusatives and passives. In both cases the extraction originates from an internal argument position in a configuration where this is the only argument present. For unergatives, which also only have one argument, extraction is slightly degraded. This seems to be a reflection of the fact that the extraction originates from an external argument position. Turning to the two conditions with two overt arguments, we observe a contrast between objects and transitives. This seems to be a reflection of the fact that in the object case we are extracting from an internal argument position while we are extraction from an external argument position in the transitive condition. See also the descriptive results in Table 3.6.

Table 3.6: Experiment 3: Descriptive Statistics

	no Split	Split
Unaccusative	5.79	4.65
Object	5.39	4.36
Passive	5.84	4.74
Transitive	5.52	3.51
Unergative	5.85	4.32

Let us now turn to the chart in Figure 3.7. For reasons of better legibility, we zoomed in on the area between 3 and 6 on the scale. The two top grey lines for unaccusatives and passives are almost identical. The grey dotted object line shows an overall lower acceptability, an ARGUMENT TYPE main effect, but is still parallel to the unaccusative and the passive lines, i.e. there is no interaction effect. The two black lines represent those conditions where the extraction originated in an external position. The solid black line, the transitive condition in (31-d), shows the steepest slant, which points to an interaction effect between the factors ARGUMENT TYPE x EXTRACTION. The dashed black line, the unergative condition in (31-e), is also non-parallel to the unaccusative, passive and object lines, but its slant is slightly less steep.

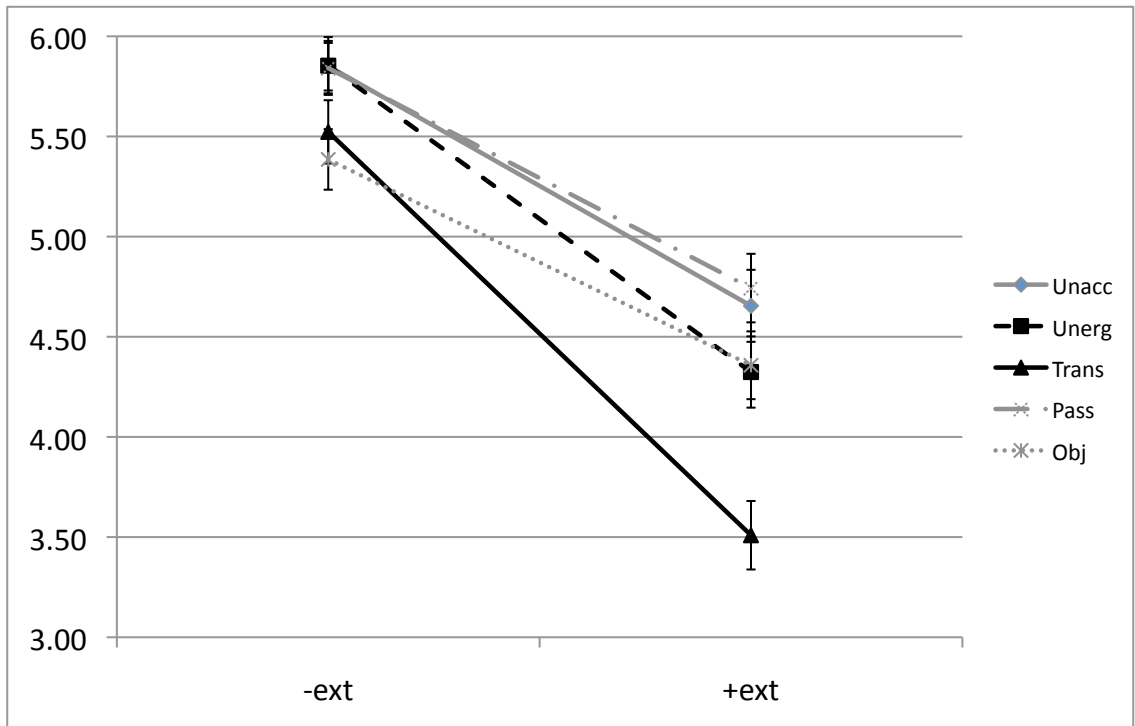


Figure 3.7: Experiment 3A: Results

So far we mostly considered the descriptive statistics, which gave us a first picture of the results. Let us turn to the statistical tests now. We conducted 2x2 ANOVA subanalyses of the ARGUMENT TYPE x EXTRACTION interaction effects



The results are summarized in Table 3.7.

Table 3.7: ANOVA 2x2 subanalyses ARGTYPE x EXT interaction effects ( $p$ -values)

	<i>Unaccusative</i>	<i>Unergative</i>	<i>Transitive</i>	<i>Passive</i>	<i>Object</i>
Unaccusative	N/A	.26	**	1	.68
Unergative	.26	N/A	*	.18	*
Transitive	**	*	N/A	***	***
Passive	1	.18	***	N/A	.63
Object	.68	*	***	.63	N/A

We observe that the transitive condition shows interaction effects with all other conditions. This means that subextraction out of transitive subjects incurred a disproportionately higher cost than any other extraction. Recall that the transitive condition is the only condition with both a more complicated argument structure (2 arguments instead of 1) and where the extraction originated from an external argument position.

The unergative condition only shows marginal interaction effects with transitives and objects but not with unaccusatives and passives. While we saw a slight trend in the descriptive statistics above that unaccusative and passive subjects, i.e. internal arguments, tolerate extraction better than unergatives, i.e. external arguments, this trend fails to reach significance. Since we do see a pattern in the direction we expect we will follow-up on the contrast between unergatives and unaccusatives in Experiment 3B below.

Passives, unaccusatives and unergatives do not show any ARGUMENT TYPE x EXTRACTION interaction effects with respect to each other, i.e. extraction causes the same relative degradation in all three cases. The last interesting aspect of the results we would like to stress is that unergatives and transitives show an effect. This suggests that even though we are extracting out of external argument positions in both cases, the more complicated argument structure in the transitive case has a disproportionately stronger effect on the extraction. This is a similar effect to what

Kravtchenko et. al. (2009) found for extraction out of Russian subjects.

#### 3.4.1.4 Discussion

The results of this experiment continue the trend we saw in the previous experiments. We see evidence pointing to the conclusion that the CED holds in German: subjects merged as specifiers are degraded as compared to subjects merged as complements and objects. In other words, the asymmetry we saw in unergative subjects vs. objects seems to extend to internal arguments in general. This does not come as a surprise. Recall from the discussion in section 3.1.1 that the term 'subject' only plays a descriptive role but no constraints are defined by it. The only notion that matters is being in a sister relationship with V. Subjects of unaccusatives, passivized subjects and objects all occupy this structural position and thus allow extraction. Subject of unergatives are merged as specifiers, and subextraction out of them is degraded.

Recall, however, that in the one-argument conditions (unergatives, unaccusatives and passives), we saw a slight trend disfavoring unergatives, but this trend did not reach significance in the statistical test. One potential source of this lack of an effect could be the choice of unergative and unaccusative verbs. I based my choice solely on the auxiliary selection, which seems to have been a too simplistic metric (see Appendix B for a full list of verbs used). Sorace (2000) provides evidence for the existence of an unaccusative-unergative continuum, rather than a binary distinction. In Experiment 3B below we will compare the two types, choosing only the most extreme cases on the scale.

Furthermore, note that this is evidence that internal arguments can stay in-situ, no matter if they are assigned nominative or accusative case. In this regard German contrasts with English, which forces the movement to SpecTP of subjects of unergatives, unaccusatives and passives alike. Our results lead us to take sides

with claims from the theoretical literature, according to which the EPP does not hold in German (Haider 1993, Rosengren 2002). Nominative case assignment can take place in-situ in German (Wurmbrand 2006).<sup>28</sup>

These results also shed more light on some of the loose ends of the result of the interpretations in Experiment 2. Remember that extraction out of passivized subjects patterns in a roughly bimodal way. One potential explanation we considered was the fact that our example allowed two structural analyses, one in which the internal subject stays in-situ and one in which it moves to SpecTP. In the latter case degradation would be expected as a result of freezing. In this experiment, however, an example like (31-c) forces a construal of the subject in its in-situ position. Hence no freezing effects occur.

In addition to the interaction effect we found for unergatives as compared to all other conditions, we also find an ARGUMENT TYPE main effect for unergatives and objects. The effect is most plausibly due to the extra argument in those conditions. It is well known that additional referents imply higher parsing cost, which in turn results in a lower acceptability rating. This is an effect fully independent of extraction.

We conclude that this experiment fits in with the trends we saw in our previous studies. There is, however, again the concern that extra-grammatical factors are (partially) responsible for the pattern we see. After all, we saw that the number of arguments has an effect on the acceptability of the extraction. In order to exclude the possibility that effects we saw can be reduced to this difference, we conducted a follow-up experiment where we contrasted extraction out of subjects of intransitive unergatives vs. unaccusatives.

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<sup>28</sup>We are agnostic as to whether this is instantiated as a long distance Agree operation or as covert raising.

### 3.4.2 Experiment 3B

#### 3.4.2.1 Methodology and Design

37 native speakers of German (by self-assessment) with no prior training in linguistics (a different set of speakers from Experiment 3A), were asked to rate sentences on a 7-point Likert scale presented to them in an online questionnaire. The data of all 37 participants was used for data analysis. The same methodological protocol outlined in 2.2.2 and in the previous experiments was followed.

The experiment had a 2x2 structure with the independent variables ARGUMENT TYPE and EXTRACTION. We constructed examples of *was-für* split out of subjects of unaccusatives and intransitive unergatives. This design minimizes the extra-grammatical factors discussed above. Again, an adverbial marker was used to demarcate the *vP* boundary. This gives us the following 4 conditions:

- (32)
- a. Was für Männer sind denn am Nachmittag angekommen?  
what for men are PRT on.the afternoon arrived  
'What kind of men arrived yesterday afternoon?' [unacc, -ext]
  - b. Was sind denn für Männer am Nachmittag angekommen?  
what are PRT for men on.the afternoon arrived  
'What kind of men arrived yesterday afternoon?' [unacc, +ext]
  - c. Was für Männer haben denn am Nachmittag gearbeitet?  
what for men have PRT on.the afternoon worked  
'What kind of men worked yesterday afternoon?' [unerg, -ext]
  - d. Was haben denn für Männer am Nachmittag gearbeitet?  
what have PRT for men on.the afternoon worked  
'What kind of men worked yesterday afternoon?' [unerg, +ext]

The verbs used were based on the unaccusativity hierarchy proposed by Sorace (2000). To bring out the unergative-unaccusative contrast the strongest, only words from either end of the scale were chosen (change of states verbs on the unaccusative end, and controlled process (non motional) verbs on the unergative side). See the appendix for the full set of items.

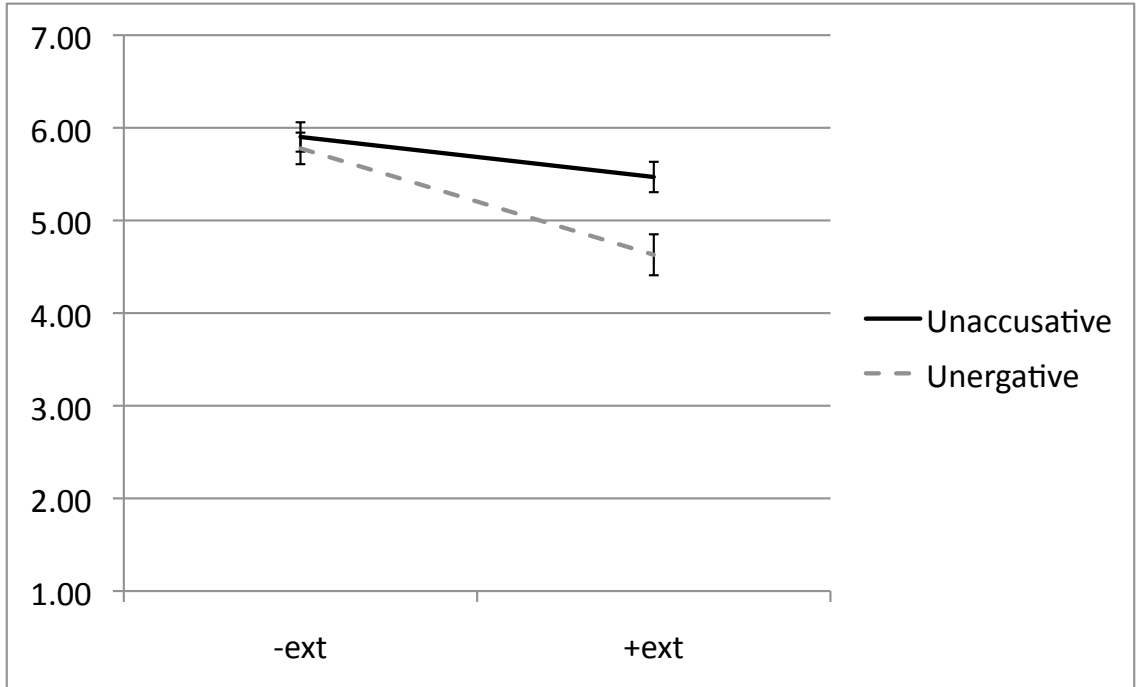


Figure 3.8: Experiment 3B: Results

### 3.4.2.2 Results

We see the familiar contrast between unergatives and unaccusatives, as indicated by the non-parallel lines in Figure 3.8. Again extraction out of unergative subjects (4.67) is degraded compared to extraction out of unaccusatives (5.59) ( $t(1,81)=3.05$ ,  $p=.0013$ ). The base line conditions without extraction are almost identical (5.85. for unergatives vs. 5.95 for unaccusatives,  $t=.54$ ). An ANOVA confirms that there is a PREDICATE TYPE x EXTRACTION interaction effect:  $F(1,80)=74.714$ ,  $p<.001$ ).

### 3.4.2.3 Discussion

This experiment confirms the results found in the previous study, while excluding the potential extra-grammatical factors. We have two virtually identical sets of strings that should show no differences in parsability and information structure. A. Goldberg (p.c.) argues that there might be a difference between unaccusatives and unergatives in how easily the subject can be focused. She points out that the

subject can be stressed contrastively more easily in (33-a) compared to (33-b). This would account for the different extraction patterns, she argues, as focus domains allow extraction more easily (capitals indicate prosodic stress).

- (33) a. The MAN arrived.  
b. ??The MAN worked.

Goldberg’s observation for (33) seems empirically correct and can be replicated for German. However, there are two issues with her objection. On the theoretical side, it is not clear at all why these information structural facts should affect syntactic extraction. For a number of counterarguments against her proposal see section 3.2.5.1 and Lidz & Williams (2009).

On the empirical side, focusability of the subject is not coextensive with unaccusativity. There are many unaccusative verbs that behave just like unergatives in this respect.<sup>29</sup>

- (34) ??The MAN died.

It seems that the extraction patterns for these verbs are the same as the one found in our experiment:

- (35) a. Was sind denn für Mädchen rot geworden?  
what are PRT for girls red turned  
'What kind of girls blushed?'  
b. ?Was haben denn für Mädchen gearbeitet?  
what have PRT for girls worked  
'What kind of girls worked?'

A further study would have to be conducted to confirm this intuition. As those types of preciates that facilitate the focusability of the subject cross-cut the unerga-

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<sup>29</sup>Thanks to Alexander Williams for bringing my attention to this point.

tive/unaccusative divide, it would be of particular interest to test whether they are two separate factors that affect the acceptability of the extraction. First, we would need to establish in an independent study which verbs most easily allow focus interpretations of the subject. This is likely to result in a continuum of verbs. For now, let us call those verbs that most easily allow focused subjects, *+focus* and those that do not *-focus*. A further study could then combine these factors and look at the acceptability of extraction out of *+focus, unaccusatives, -focus, unaccusatives, +focus, unergatives* and *-focus, unergatives*. No matter what the outcome of such a study would be, it would have very interesting consequences for our theories of extraction. If there is an unaccusative/unergative divide on top of the *focus* effect - which I take to be the most likely result - it seems that a grammatical constraint and an information structural constraint are needed to explain the data. If we do not see any unaccusative/unergative difference but only a *focus* effect, a purely information structural account might be feasible. Then the question arises what the details of this account would be and how it would handle the problems raised by Lidz & Williams (2009) and in section 3.2.5.1. We leave these questions open for future research.

We conclude this section with another small remark on the role of unaccusativity with respect to subextraction. It is well known that not all unaccusatives are the same. As mentioned above, Sorace (2000) and Keller (2000) report cross-linguistic evidence drawn from auxiliary selection for an unergative-unaccusative continuum. It would be interesting to test experimentally whether auxiliary selection as an indicator of where a specific verb is situated on the unergative-unaccusative continuum correlates with the permeability of the subject. Here French presents an interesting case. Certain verbs in French optionally take either a 'have' or 'be'. The *combien de* split-construction seems to be sensitive to this contrast (M. Gagnon's judgment):

- (36) a. Combien<sub>i</sub> sont apparus [<sub>t<sub>i</sub></sub> des étudiants]?  
           how-many are appeared of.the students  
       b. ?Combien<sub>i</sub> ont apparus [<sub>t<sub>i</sub></sub> des étudiants]?  
           how-many have appeared of.the students  
           ‘How many students have appeared?’

In both cases *combien* is subextracted from a post-verbal position. The choice of the auxiliary, however, causes an asymmetry between the two examples. Native speakers have the intuition that the subject in (36-b) is somewhat more agentive than in (36-a). (36-a) is in a certain sense more unaccusative than (36-b) and allows extraction more easily. We leave it to future work to further investigate minimal pairs of that form cross-linguistically to see how notions like unaccusativity, agentivity, auxiliary selection and permeability of the subject are interrelated.

### 3.4.3 Conclusion

Wrapping up this section, we can conclude that the experiments in this section provide further evidence for the existence of CED effects in German. We saw that controlled experimental elicitation of the data can bring out these effects, which were only partially noticed in the theoretical literature. We tested complement/non-complement asymmetries in a number of different contexts and have made every effort to exclude the possibility of extra-grammatical explanations for the observed acceptability patterns. In the next experiment, the final one on *was-für* split, we will scrutinize the role object scrambling plays with respect to subject subextraction, a state of affairs Müller (2010) refers to as *Melting*.



## 3.5 Experiment 4 - Melting

### 3.5.1 Introduction

Recall from section 3.1.3.2 that Müller (2010) reports the following contrast:

- (37) a. \*Was haben denn für Leute den Fritz getroffen?  
what have PRT for people the Fritz met  
'What kind of people met Fritz?'  
b. Was haben den Fritz<sub>i</sub> denn für Leute <sub>t<sub>i</sub></sub> getroffen?  
what have the Fritz PRT for people met  
'What kind of people met Fritz?'  
[Müller 2010, p.61]

Müller claims that extraction out of the external subject is only possible if the object is scrambled across it. This would follow from, indeed be a prediction of, his theory and his theory only (see section 3.1.3.2 and Müller's paper for the details of his account). This datum is intriguing but some scepticism is warranted whether it in fact holds as reported. There are a number of issues.

First, Müller follows the tradition of imposing a binary distinction onto a continuum. Neither (37-a) or (37-b) are perfect. Is there a difference in the direction he suggests? It is quite possible but the difference in acceptability is certainly not significant enough to warrant putting an asterisk on one and nothing at all on the other. Müller points out that 'the data have been checked with a number of native speakers' but does not explicate how many speakers 'a number of speakers' is, what kind of native speakers he consulted (linguistic colleagues or naive informants), what kind of task was employed etc. As discussed at some length in section 2.2, this is a fine practice for clear-cut cases but methodologically inadequate for controversial data such as (37).<sup>30</sup>

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<sup>30</sup>Of course, it could be contested as to what constitutes controversial data. Since people's opinions on this point are also likely to differ, I suggest erring on the side of caution and consid-

Second, all things are not equal in (37). (37-b) differs from (37-a) in that it has a marked word order, which changes the information structure. So even if the contrast holds as reported, it is not clear that it is due to a grammatical difference. In this experiment we will address the status of the data, as given by Müller, and we will see that it does not hold as reported. We will also see, however, that it is tricky to control for all extra-grammatical factors. Let me explain why.

We know that (i) marked order affects acceptability, that is SUB > OBJ is preferred to OBJ > SUB. We have also known since Behagel (1923) that, *ceteris paribus*, (ii) the order definite > indefinite is preferred as compared to indefinite > definite. Finally, we saw in section 3.3 that (iii) *was-für* split does not fare well when another indefinite argument is present. If we apply the facts in (i) - (iii) to (37-b), we see that according to (i) its acceptability should be decreased compared to (37-a) while it should be increased according to (ii). If we try to control for these conflicting tensions by making the object indefinite, we run into the problem posed by (iii).

This unholy trinity makes it very challenging to produce a perfect set of stimuli. For this reason we only look at the kind of examples Müller discusses, and we find that his data does not hold as reported. It does not, however, fully disentangle the tension between (i) and (ii). Ultimately, a full-fledged empirical investigation of Melting will have to take into consideration context effects, i.e. presents the stimuli providing a specific context. This is left open for future work.

### 3.5.2 Methodology and Design

37 native speakers of German (by self-assessment) with no prior training in linguistics (a different set of speakers from Experiment 3), were asked to rate sentences

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ering every piece of data that is not crystal-clear and beyond doubt to any speaker imaginable as controversial.

on a 7-point Likert scale presented to them in an online questionnaire. The data of all 37 participants was used for data analysis. The same methodological protocol outlined in 2.2.2 and in the previous experiments was followed.

This experiment compared extraction out of external subjects with and without the scrambled object as well as extraction out of the object. A subject and an object question without *was-für* split were added as a control. Only animate NPs were used. This gives us the following set of stimuli:

- (38)
- a. Ich frage mich, was für ein Käfer gestern am Nachmittag den  
I ask myself what for a beetle yesterday on.the afternoon the  
Beamten gebissen hat.  
clerk bitten has [sub, -ext]  
'I ask myself what kind of beetle bit the clerk yesterday afternoon.'
  - b. Ich frage mich, was für einen Beamten der Käfer gestern am  
I ask myself what for a clerk the beetle yesterday on.the  
Nachmittag gebissen hat.  
afternoon bitten has [obj, -ext]  
'I ask myself what kind of clerk the beetle bit yesterday afternoon.'
  - c. Ich frage mich, was gestern am Nachmittag für ein Käfer den  
I ask myself what yesterday on.the afternoon for a beetle the  
Beamten gebissen hat. [-melting]  
clerk bitten has  
'I ask myself what kind of beetle bit the clerk yesterday afternoon.'
  - d. Ich frage mich, was den Beamten gestern am Nachmittag für  
I ask myself what the clerk yesterday on.the afternoon for  
ein Käfer gebissen hat. [+melting]  
a beetle bitten has  
'I ask myself what kind of beetle bit the clerk yesterday afternoon.'
  - e. Ich frage mich, was der Käfer gestern am Nachmittag für  
I ask myself what the beetle yesterday on.the afternoon for  
einen Beamten gebissen hat. [object, +ext]  
a clerk bitten has  
'I ask myself what kind of clerk the beetle bit yesterday afternoon.'

### 3.5.3 Results

Unsurprisingly, we find an asymmetry between subject and object question without *was-für* split. The object condition is significantly degraded compared to the subject condition (5.12 vs. 5.93,  $t(1,80)=3.04$ ,  $p=.0014$ ). This is very likely to be an effect of marked word order  $O > S$  (cf. Lenerz 1977, Müller 1999).

Turning to the extraction conditions, our results show that scrambling of the object does not improve the subextraction out of subjects (3.57 vs. 3.88), as illustrated in Figure 3.9. The difference is not significant: ( $t < 1$ ). Furthermore, both subject extraction conditions are significantly less acceptable than the extraction out of objects control: ( $t(1,80)=1.74$ ,  $p=.041$ ) for objects vs. subject (without object scrambling) and ( $t(1,80)=2.6$ ,  $p<.004$ ) objects vs. subject (with object scrambling). This is the exact reverse of what we found for the -extraction condition, (38-a) vs. (38-b), suggesting that the cost of subextraction out of subjects outweighs the cost incurred by the marked word order effect.

Looking at the individual distribution of the data reveals that only 3 out of the 27 speakers (11%) tested show a significant preference for the subject subextraction with scrambling compared to the one without scrambling.

### 3.5.4 Discussion

The experiment shows that Müller's judgments does not seem to reflect a general pattern. Only 11% of the speakers tested share his intuition that object scrambling improves the acceptability of subject subextraction. Surely, the data of these 3 speakers is relevant and their behavior is predicted by Müller's theory. But what about the remaining 89 %?

This data needs to be handled with care. As discussed above, a number of factors could affect the acceptability pattern. While we controlled for animacy and definiteness, it is well known that O-S word order in German results in a marked

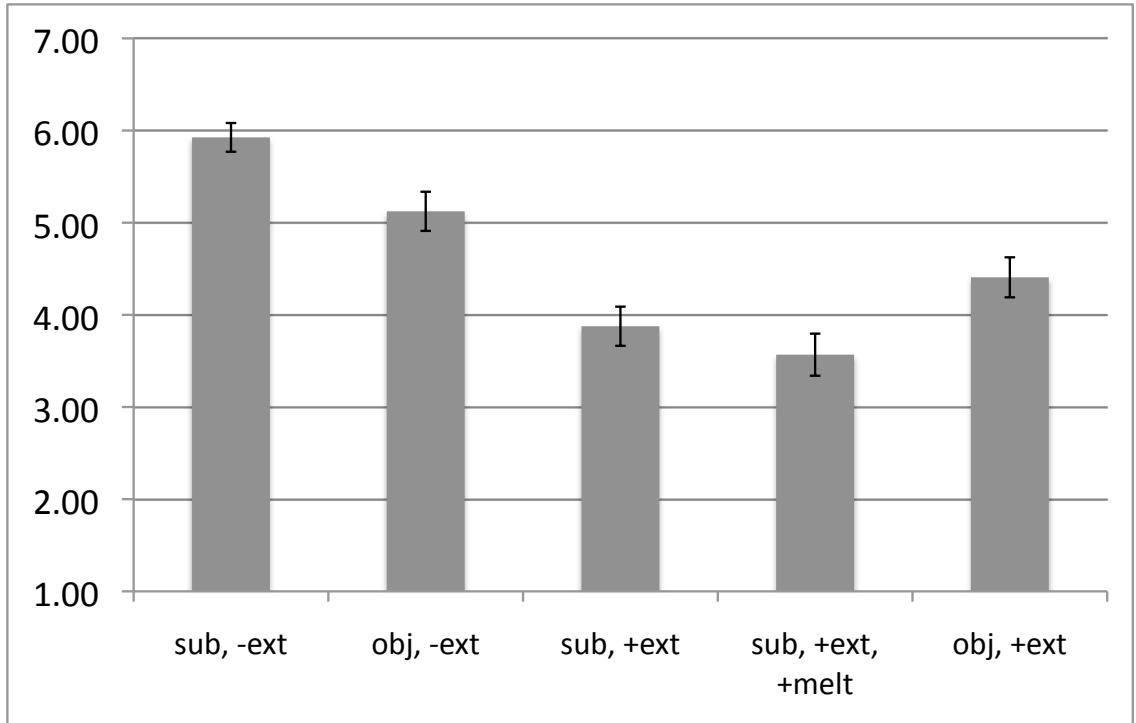


Figure 3.9: Experiment 4: Results

information structure, which notoriously reduces the acceptability when judged in out-of-the-blue contexts. We see this in action looking at the contrast between (38-a) vs. (38-b). The object question is degraded compared to the subject question, presumably because of the marked word order it creates.

To counterbalance these effects the target items would need to be embedded in appropriate contexts that make the marked word order more natural. Unfortunately, that is easier said than done for various reasons. First, it is a challenge to the creative capacity of the researcher to construct appropriate and similarly felicitous scenarios for dozens of sentences (see for instance Fanselow et. al.'s (2008) struggle to create appropriate contexts to control for the O-S word order created by superiority in German).

But even the most skillful experimenter cannot avoid the problem created by Höhle's (1982) insight that the marked word order is always a subset of the unmarked word order with respect to its pragmatic felicity. In other words, the

unmarked order is felicitous in every marked context, while marked word orders are not felicitous in an unmarked context. To illustrate consider the following example:

- (39) a. Ein Mann hat das Schaf gestreichelt.  
a.NOM man has the.ACC sheep petted  
'A man petted the sheep.'  
b. Das Schaf hat ein Mann gestreichelt.  
the.ACC sheep has a.NOM man petted  
'As for the sheep, a man petted it.'

(39-a) but not (39-b) is a felicitous utterance in an out-of-the-blue context, e.g. as an answer to a question like *What happened?*. (39-b) is appropriate in a context where the sheep is old information, e.g. as an answer to the question *What happened to the sheep?*. (39-a), however, covers all the contexts (39-b) does and as such would also be appropriate in a context where the sheep is old information, albeit with a different prosodic stress. So even if (39-b) were appropriate in a certain context, a speaker might still prefer (39-a), as S-O sequences are considerably more frequent than O-S sequences.

The bottom line is that Müller's melting effects, as reported in his paper, are not confirmed by studies of a larger group. This does not necessarily imply that scrambling of the objects does not affect subextraction out of subjects. There might still be some reality to this intuition and we leave it up to future research to test the acceptability under improved methodological conditions (e.g. adding context) and to provide further discussion about how much of the differences in acceptability found have grammatical and how much have an extra-grammatical source.

## 3.6 Accounting for the data

### 3.6.1 The LCA in SOV languages

In the following section we would like to give an account of the experimental findings reported in this chapter in terms of Uriagereka's (1999) Multiple Spell-Out (MSO) account, which we already summarized in section 2.1.2.1. Before we move on, however, let us step back and look at how the LCA handles an SOV language like German and what the implications for an account in terms of MSO are.

Kayne (1994) departs from the assumption that there is a head parameter in the grammar which differentiates SVO languages like English or French from SOV languages like German or Japanese. He tries to derive a universal Spec-Head-Complement order from the LCA, with head-final sequences being the result of overt raising of the complement to a position asymmetrically c-commanding (a-CCing) the head. The assumption that SVO is the only possible base order has received strong opposition, unsurprisingly mainly by linguists speaking SOV languages, on both theoretical and empirical grounds (see Rohrbacher (1994) and Fukui & Takano (1998) and the references cited therein).

On the empirical side, Kayne's proposal seems to be making the incorrect prediction that SOV languages should not allow extraction out of objects as a result of freezing, i.e. if the object position is derived, extraction would originate from a moved domain. This prediction is quite obviously wrong for languages like German, Dutch or Japanese.<sup>31</sup> To take a concrete case, consider the example in (40). If the SOV order in (40-a) were derived from an underlying SVO order as indicated in (40-b), we would expect from our discussion in section 2.1.1.3 that *was-für* split should be blocked as a result of freezing. The extraction out of the object position,

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<sup>31</sup>Kayne (p.c.), addressing this issue, points out that the subextraction could take place from the base position while the SOV word order is derived by subsequent remnant movement. This is certainly possible but not without complications. For discussion and problems with this proposal see Abels & Neeleman (2009).

however, is highly acceptable, as confirmed by the data presented in this chapter, which strongly indicates that the object is in an in-situ position and SOV is the base word order, as indicated in (40-c).

- (40) a. Ich weiß nicht, was die Ameise für einen Beamten gebissen hat?  
 I know not what the ant for a.ACC clerk bitten has  
 'I don't know what kind of ant bit the clerk?'  
 b. Ich weiß nicht, was<sub>i</sub> die Ameise [<sub>t<sub>i</sub></sub> für einen Beamten]<sub>j</sub> gebissen hat <sub>t<sub>j</sub></sub>?  
 c. Ich weiß nicht, was<sub>i</sub> die Ameise [ <sub>t<sub>i</sub></sub> für einen Beamten] gebissen hat ?

But even on the conceptual side, as pointed out by Rohrbacher (1994), a universal SVO order does not follow directly from the LCA, contrary to Kayne's claim. Concretely, the following statement, found in Kayne (1994:35), is not a direct consequence of the LCA:

'It will always be the case, in any phrase marker, that specifier (S) and complement (C) are on opposite sides of the head (H) [...] of the six permutations of H, S and C only two are permitted by the theory, namely, S-H-C and C-H-S. The other four (**S-C-H**, C-S-H, H-S-C, H-C-S) are all excluded by the requirement that specifier and complement be on opposite sides of the head. [my emphasis, JJ]'

The fact that this statement does not follow from the LCA is illustrated in the SVO and SOV trees in (41):

(41)





In both trees a-CC establishes the same hierarchical relations between the non-terminals (see Kayne 1994: Chapters 1 -4 for the details of the theory), i.e. the LCA yields the following set of *D*-relations between non-terminals, (42-a), and hence the following set of non-terminal-to-terminal dominance relations *d*, (42-b):

$$(42) \quad \begin{array}{ll} \text{a.} & D(A) = \{ \langle NP_1, VP \rangle, \langle NP_1, V \rangle, \langle NP_1, NP_2 \rangle, \langle NP_1, N_2 \rangle, \langle V, N_2 \rangle \} \\ \text{b.} & d(A) = \{ \langle n_1, v \rangle, \langle v, n_2 \rangle, \langle n_1, n_2 \rangle \} \end{array}$$

Rohrbacher points out that Kayne's claim according to which the statements  $\langle n_1, v \rangle$  and  $\langle v, n_2 \rangle$  together imply that  $n_1$  and  $n_2$  have to be on opposite sides of  $v$  only if ordering relations of the type  $\langle x, y \rangle$  are sequential in nature and not structural. Concretely, the pair  $\langle n_1, v \rangle$  in (42-b) 'translates into  *$n_1$  is dominated by a non-terminal which asymmetrically c-commands a non-terminal dominating  $v$* , but not into  *$n_1$  spatially [or temporally] precedes [or follows]  $v$* ' (Rohrbacher 1994:14). He illustrates this with the following analogy, which I slightly personalized: in the 1928 Amsterdam Olympics Weightlifting competition the Men's Individual Featherweight event finished with Franz Andrysek of Austria, the author's granduncle (!), winning the gold medal, Pierino Gabetti of Italy winning silver and Hans Wölpert of Germany winning bronze. This situation can be described in set-theoretical terms:

$$(43) \quad \{ \langle \text{Andrysek, Gabetti} \rangle, \langle \text{Andrysek, Wölpert} \rangle, \langle \text{Gabetti, Wölpert} \rangle \}$$

These ordered pairs only describe the relation 'x is a better weightlifter than y', or 'x's performance was better than y's' etc. There is no implication, however, as to any sequential or temporal ordering of these three individuals. In fact, the set in (43) can be represented as in Figure 3.10, where the gold medal winner is in the middle between silver and bronze (which is common practice at the Olympics). There is no reason to rule out the possibility that languages differ in how they map

$d(A)$  sets into temporal sequences. This, in essence, amounts to saying that there exists a head parameter.<sup>32</sup>



Figure 3.10: The Olympic podium

#### 3.6.1.1 The LCA as last resort

While Rohrbacher's point is well-taken, it is now less clear how the mapping from ordered sets in the  $d(A)$  to actual temporal sequences should work. The only two straightforward options are to (i) follow Kayne and assume that a-CC always maps into linear precedence (yielding SVO) or (ii) that it maps into subsequence (yielding OVS, which is typologically implausible). The mapping algorithm from the  $d(A)$   $\langle S, V \rangle$ ,  $\langle S, O \rangle$ ,  $\langle V, O \rangle$  to the actual sequence SOV has to be more complicated. The system needs a way of keeping track of what the specifiers are, because they always have to precede the heads, and what the complements are, because they always have to follow the head. This algorithm, however, applies to terminals which do not contain this information. In addition, it is not clear how these different mappings should be formulated in terms of parameters, short of merely restating the facts, i.e. in SVO languages the algorithm maps into SVO, in SOV it maps into SOV etc. We conclude that neither Kayne's way of deriving SOV orders in terms of movement nor modifying the mapping algorithm from  $d(A)$  sets to temporal

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<sup>32</sup>This is essentially the position taken by Richards (2004), Saito & Fukui (1998); see also Fukui & Takano (1998), who assume SOV orders to be more basic and derive SVO structures through head movement.

sequences is satisfactory. The former runs into a number of empirical problems and lacks independent motivation while the latter is undesirable from conceptual and from a learnability point of view.

I will suggest a different solution:

- (44) Linear ordering between a head and its first-merged complement is lexically determined by the head. The LCA applies elsewhere.

(44) essentially reintroduces the head-parameter.<sup>33</sup> The idea is that a lexical head determines the linear ordering with respect to its first-merged complement. All other ordering relations are handled by the LCA.

The LCA has always had a troubled relationship with heads and complements. For simplex complements Kayne created the asymmetry by employing unary branching for these complements as in (41). He then stipulated the distinction between categories and segments and redefined c-command to only apply to categories but not to segments (see Kayne 1994:16ff. for the details).

Furthermore, many languages are not consistently Spec-Head-Comp or Spec-Comp-Head but show mixed patterns depending on the categories. It is well known that in German VPs are head-final while PPs are head-initial, as illustrated in the following example:

- (45) Es scheint, dass der Hermes den Kurt in der Scheune  
 it seems that the.NOM Hermes the.ACC Kurt in the shed  
 versteckt.  
 hides  
 'It seems that Hermes is hiding Kurt in the shed.'

The VP shows the order  $[[\text{den Kurt}] \text{ versteckt } _V]$  (Comp-Head), while the PP has the order  $[_P \text{ in } [\text{der Scheune}]]$  (Head-Comp). To make things worse, even within the

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<sup>33</sup>Similar proposals are made by Saito & Fukui (1998) and Richards (2004).

same category there is lexical variation in the ordering of head and complement (the head is marked in boldface).

- (46)
- a. **in** den Fluß  
in the.ACC river  
'in the.ACC river'
  - b. \*den Fluß **in**  
the.ACC river in  
'in the.ACC river'
  - c. den Fluß **entlang**  
the.ACC river along  
'along the river'
  - d. \***entlang** den Fluß  
along the.ACC river  
'along the river'

This leads us to the conclusion that the ordering relation between heads and complements is an idiosyncratic lexical property of the head and does not fall under the LCA. Only when the ordering relation between two non-heads needs to be determined does the system call upon the LCA as a last resort mechanism. This allows us to retain Kayne's insight that specifiers are always left and that movement is (at least largely) to the left<sup>34</sup>, while it gives us the flexibility in the head-complement domain needed to capture the inter -and intralinguistic variation we find.<sup>35</sup>

Taking out the LCA from the domain of heads and their complements allows us to maintain MSO for SOV languages. If SOV word orders are not the results of movement, we do not predict any freezing effects for extraction out of complements,

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<sup>34</sup>There are a number of cases of movement to the right, e.g. extraposition, heavy NP shift, rightward focus etc. Whether this is genuine syntactic movement or movement at PF is still a matter of debate. See Drummond (2009) for a recent proposal of rightward movement as genuine syntactic movement and section 4.3 for further discussion of extraposition. How syntactic movement to the right can be reconciled with the LCA is unclear.

<sup>35</sup>One potentially problematic case arises when a simplex specifier such as a proper name is merged. In strict BPS terms this specifier would also be a head and the LCA would not apply. It is unclear, however, whether simplex specifiers really exist (see Burge 1973 and Longobardi 1994 for arguments that even proper names are internally complex). In addition, BPS is often assumed to be at work in narrow syntax only, while more specific information needs to be available at the interfaces (Chomsky 1995). If so, PF would recognize simplex specifiers as XPs (rather than heads) and the LCA can apply.

as is shown in (40). Even though linearization in terms of a-CC relations is at the core of MSO, it does not seem to be necessary to follow Kayne in all details. Recall that the core insight of the MSO theory is that phrase markers assembled in a separate workspace need to be spelled-out to the interfaces before they can be merged with the main spine. This requirement is forced upon the system by PF-linearization requirements defined in terms of a-CC. However, nothing in principle prevents us from departing from Kayne’s assumption that directionality is universally fixed as S-H-C and that all other sequences are derived by movement. We can instead retain the insight of MSO, while acknowledging the conceptual and empirical advantages of a head parameter. Hence, for the purpose of this paper we will assume that both SVO as well as SOV sequences are base-generated.

### 3.6.2 A MSO Account of *was-für* split

We will now sketch how the *was-für* split data is accounted for. The cases of extraction out of non-finite clauses in German discussed in the following chapter work in a parallel way.

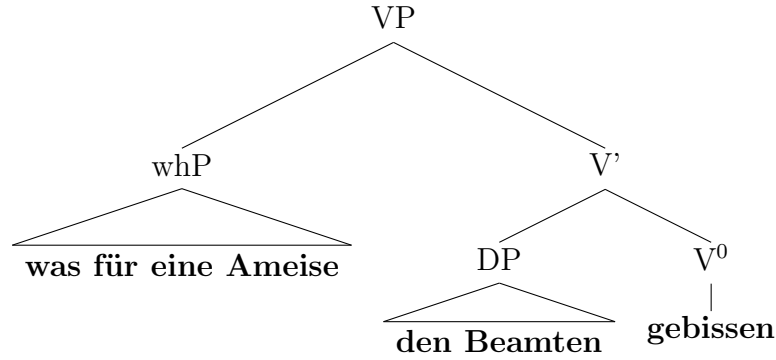
Let us turn to *Was-für split* of the kind explored in this chapter. Consider the VP in a case of extraction out of VP-internal subjects as in (14-c) (repeated in (47)) with a structure as in (48).<sup>36</sup>

- (47) Was hat denn für eine Ameise den Beamten gebissen?  
 what has indeed for an ant the clerk bitten  
 ‘What kind of ant bit the clerk?’

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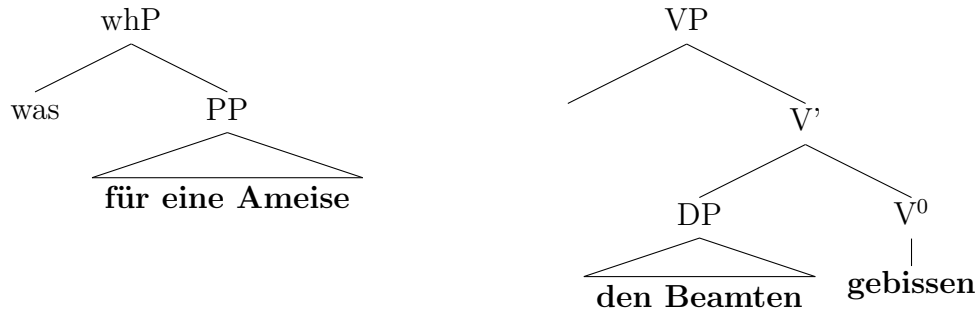
<sup>36</sup>We follow Leu (2008) in assuming that *Was-für* phrases are whPs and that *was* subextracts out of them. We will remain agnostic to the details of the structure.

(48)



How did this phrase marker come about? As we saw in section 2.1.2.1, it is in inevitability of a strictly bottom-up derivational system that complex specifiers need to be constructed in a separate workspace before they can be merged with the main spine. It follows that the two phrase markers in (49) are assembled in parallel.

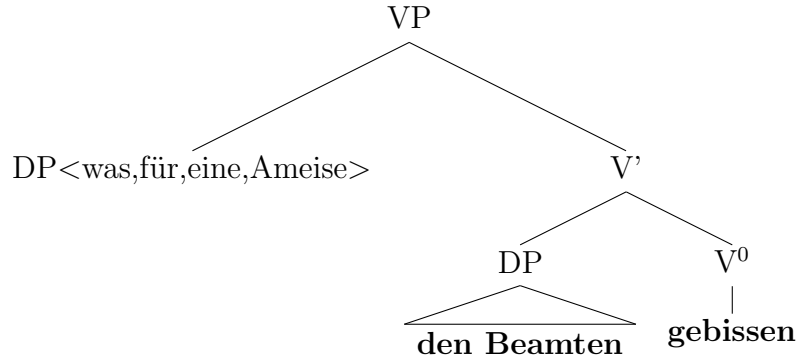
(49)



Note that we are assuming, contrary to Kayne (1994), that SOV structures are base-generated (see the discussion above).

Recall that according to (44) only the ordering between the head 'gebissen' and its complement is determined lexically. The total ordering of all other terminals is established through the LCA. In order for the LCA to yield a complete set of ordered pairs of precedence relations between the terminal elements, the specifier is spelled out independently and then merged with the main spine, yielding (50).

(50)



The elements inside the whP have been shipped off to the interfaces and can no longer be affected by syntactic operations. Now T and C are merged. The wh-feature on C cannot probe for and attract *was*, since the latter is no longer accessible for syntax. As a result, the feature on C remains unchecked and the derivation crashes. How are subject questions such as (51) derived, where the entire *was-für* phrase moves?

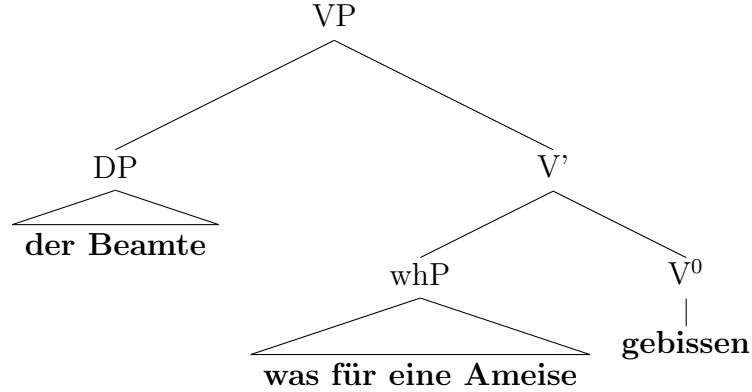
- (51) Was für eine Ameise hat denn den Beamten gebissen?  
what for an ant has indeed the clerk bitten  
'What kind of clerk did the ant bite?'

Note that even though the substructure <was,für,eine,Ameise> has been spelled-out, the entire DP is still accessible. We to assume that the wh-feature on the 'was' percolates to the DP prior to SO and is still accessible even after 'was' is spelled-out. As such, the wh-feature on C can be checked by movement of the full DP.

The MSO proposal correctly predicts *Was-für* split out of (unmoved) objects to be grammatical. For an example like (14-e), repeated as (52), we have a structure such as (53).

- (52) Was hat denn die Ameise für einen Beamten gebissen?  
what has indeed the ant for a clerk bitten  
'What kind of clerk did the ant bite?'

(53)



The object can be assembled in the main workspace. First, the whP is put together and as a result does not need to be spelled-out until the final step of the derivation. After merger of T and C, the wh-feature can probe down the main spine and finds *was*, which is copied and moved to SpecCP. The derivation converges.

Note that the same logic used to rule out subextraction out of subjects applies to subextraction out of indirect objects, as long as they are left branches. Combining the MSO with Baker's (1988) and Larson's (1988) analyses of indirect objects as complements of V, would predict them to allow extraction. We saw in Experiment 2 that this is likely to be empirically incorrect, which is a strong reason to doubt Baker's and Larson's take on the position of indirect objects.

### 3.7 ATB *was-für* split

In this section we would like to present a phenomenon that, to our knowledge, has not been discussed in the German literature so far. We would like to call this construction Across-the-Board (ATB) *was-für* split. Consider the following examples:



- (54) a. Was hat denn für eine Prinzessin für einen Frosch geküsst?  
 was hat PRT for a princess for a frog kissed  
 'What kind of princess kissed what kind of frog?'  
 b. Was wurde denn für einem Mädchen für ein Mann vorgestellt?  
 what was PRT for a.DAT girl for a man introduced  
 'What kind of man was what kind of girl introduced to?'

Note that this construction is different from *wh*-exclamatives. Consider these examples from Austrian German:

- (55) a. Was hat die Weinkönigin nur für einen Ungustl geheiratet!  
 what has the wine.queen only for a scumbag married  
 'How could the wine queen marry such a scumbag!'  
 b. Was haben nur für Politiker für an Bledsinn zamgredet!  
 what have only for politicians for a.ACC nonsense talked  
 'How could these sorts of politicians talk this sort of nonsense!'

The utterance in (55) does not request information, but is a statement of amazement or disbelief. Holding *wh*-exclamatives and *was-für* split apart becomes particularly important in light of the discussion of these phenomena in Dutch brought to my awareness by Norbert Corver (p.c.). Corver reports the following contrast for Dutch:

- (56) a. Wat hebben er 'n mensen 'n boeken gekocht! [Dutch]  
 what have there a people a books bought  
 'So many people bought so many books!'  
 b. \*Wat hebben er voor n' mensen voor 'n boeken gekocht?  
 what have there for a people for a books bought  
 'What kind of people bought what kind of books?'

In Dutch a single *wat* cannot be associated with two *voor* remnants, as shown in (56-b). This contrasts with the *wat*-exclamative in (56-a). Corver (1991) takes this contrast as an argument that the *wat*-exclamative construction, unlike *wat voor*-split, does not involve *wh*-extraction. While both constructions seem remarkably

similar in German and Dutch, German *was-für* split allows one fronted *was* to be associated with two *für* remnants, as shown in (54). These examples could not be parsed as wh-exclamatives since the particle *denn* is only licensed in a question context. We conclude that German allows true ATB *was-für* split. It is beyond the scope of this paper to explain why Dutch and German pattern differently in this respect.

As the English translations of (54) suggest, we are truly asking multiple questions about pairs of individuals. Possible answers for (54-a) could be: *A pretty princess kissed an ugly frog*, *A tall princess kissed a green frog*, *A purely dressed princess kissed a happy frog*, etc. Note that the qualities we are quantifying over do not have to be of the same type, i.e. you can talk about the height of individual A and the color of individual B etc.

Another interesting property of ATB *was-für* split is that for some speakers it can ameliorate island violations very similar to Parasitic Gap (PG) constructions, i.e. a *good* gap licenses a *bad* gap:<sup>37</sup>

- (57) Extraction out of subjects repaired by ATB-movement
- a. ?\*Was hat denn für eine Prinzessin einen Frosch geküsst?  
     was hat PRT for a princess a frog kissed  
     'What kind of princess kissed a frog?'
  - b. Was hat denn für eine Prinzessin für einen Frosch geküsst?  
     was hat PRT for a princess for a frog kissed  
     'What kind of princess kissed what kind of frog?'

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<sup>37</sup>In a sense, PG-*was-für* split might be the more appropriate term.

- (58) Extraction out of IOs repaired by ATB-movement
- a. \*Was wurde denn für einem Mädchen ein Mann vorgestellt?  
       what was PRT for a.DAT girl a man introduced  
       'What kind of man was what kind of girl introduced to?'
  - b. Was wurde denn für einem Mädchen für ein Mann vorgestellt?  
       what was PRT for a.DAT girl for a man introduced  
       'What kind of man was what kind of girl introduced to?'

What do we mean by *some speakers*? If this were a regular paper in theoretical syntax we would leave it at that and quote the examples with our judgments. Since we have spent a considerable amount of space discussing gradience in grammar and the need to gather data from a statistically significant group of speakers and not just a few individuals, we need to be a little more precise. When testing these constructions using the usual experimental methodology (n=23), 52% of the speakers patterned in the way reported in (57) and (58), i.e. they preferred ATB *was-für* split to simple *was-für* split out of islands. 21% did not show this pattern and with 26% you could not tell since for this group *was-für* split only seemed a marginal construction to begin with. For the last group we only found floor effects and potential differences were washed out. Interestingly, when informally asking German speaking linguists about this construction, they all shared the judgments in (58) and (57). This suggests that ATB *was-für* split is a stretch for many non-linguistically trained speakers. As we saw above, it involves a pair-list question about two sets of quality types. It is not easy to construct a plausible situation where this would be an appropriate question, a factor that often strongly influences speakers' judgments. Additionally, *was-für* split is a relatively informal construction and, despite our efforts to clarify that we were not interested in prescriptive judgments, it seems highly likely that some speakers were still affected by a prescriptivist bias.<sup>38</sup>

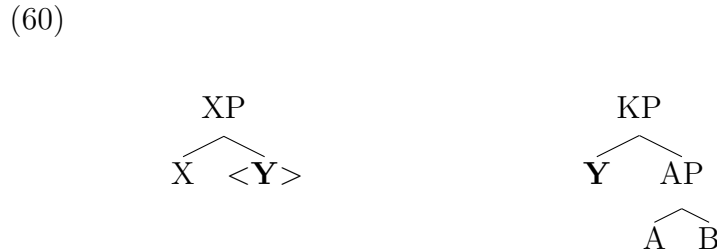
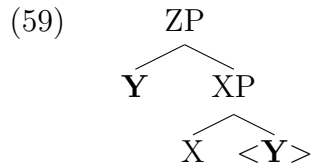
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<sup>38</sup>There is no prescriptive rule about *was-für* split in traditional German grammar books. However, it still feels like the kind of construction a high school German teacher would cross out as too informal and inappropriate for an essay.

That said, we believe that ATB *was-für* split is a genuine phenomenon of German and that the PG-like effects robustly hold. In the next section we will see how a sideward movement account of ATB movement (Nunes 2001, Hornstein & Nunes 2002) of ATB movement can provide an explanation of these facts.

### 3.7.1 A sideward movement account of ATB *was-für* split

The copy theory of movement views syntactic movement as a complex operation that can be decomposed into COPY and MERGE. In (59), Y is copied, as indicated by the angled brackets, and merged higher up in the same tree. In (60), Sideward Movement (SM) applies. Y is copied and sideward moved into a separate phrase marker, which has been constructed at the same time.



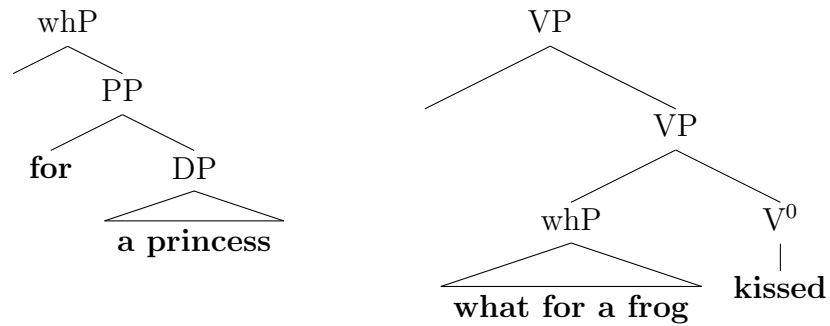
SM has been used to account for PG and ATB movement by Nunes (2001), Nunes & Uriagereka (2000) and Hornstein & Nunes (2002). We will try to show that these analyses nicely carry over to provide an account for ATB *was-für* split and also explain its property of island repair.

Consider the derivation of (57-b), repeated as (61-a), with a slightly simplified numeration such as (61-b) (For expository purposes the English glosses are used for the derivation. Of course, we are in fact deriving the German sentence.)

- (61) a. Was hat denn für eine Prinzessin für einen Frosch geküsst?  
 was hat PRT for a princess for a frog kissed  
 'What kind of princess kissed what kind of frog?'  
 b. N={T, C, what, has, PRT, for, a, princess, for, a, frog, kissed}

As a first step the object is constructed and merged with the verb to form the main spine. Simultaneously, the specifier is assembled in a separate workspace, as shown in (62).

(62)

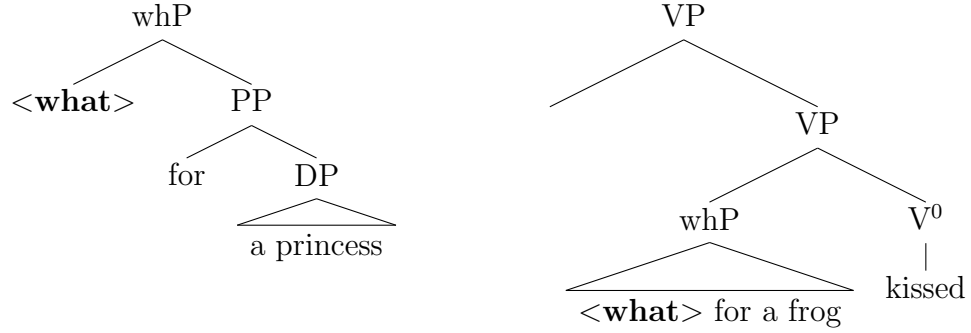


Now, we are left with the following elements in the numeration:

- (63) N={T, C, ~~what~~, has, ~~for~~, ~~a~~, ~~princess~~, ~~for~~, ~~a~~, ~~frog~~, ~~kissed~~}

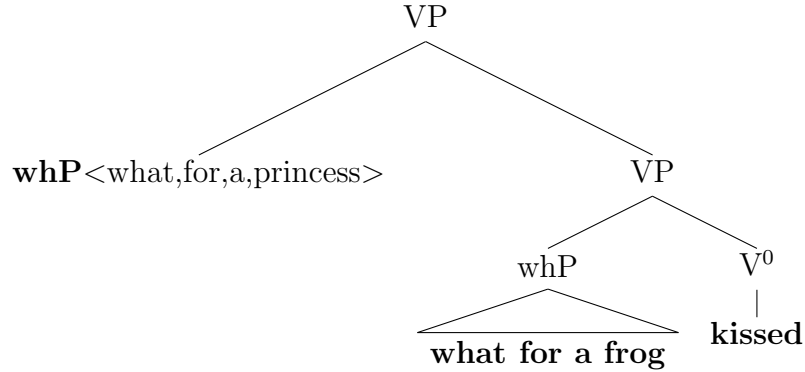
In order for the derivation to converge, *what* needs to be merged in the specifier of whP. German does not allow a for-PP to feature as thematic agent of a sentence. Since there is no *what* left in the numeration to be merged, the only way for the derivation to converge is to form a copy of *what* in the object position and sideward move it to the specifier of whP, as illustrated in (64):

(64)



The next step is to spell-out the specifier before merging it with the main spine. Recall that this step is necessary in order for the linearization algorithm to yield a total set of precedence relations (see section 2.1.2.1 and for the details). This results in the structure in (65):

(65)

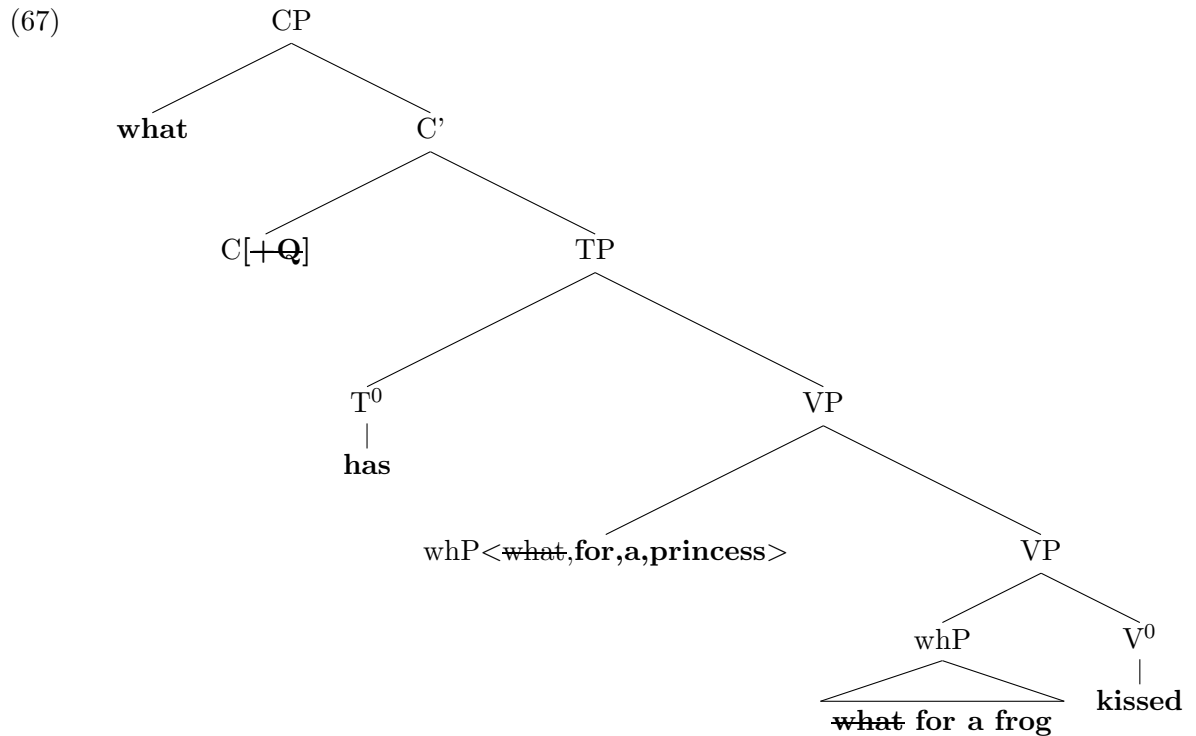


In the next steps T and C are merged. C has a Q-feature that needs to be checked. Probing down the tree, the only wh-element available is the *what* in the object position. The *what* in the subject position is no longer accessible since the entire subject whP has already been spelled-out. Norbert Hornstein (p.c.) notes that the entire whP could be a target and would thus block the attraction of the 'was' in the object position. We have argued in section 3.6.2 that the wh-feature of 'was' can percolate to whP to allow for a derivation where the entire *was-für* phrase moves to SpecCP. The only way of reconciling this situation is by assuming that the percolation of the wh-feature to whP is optional. If it does, the whP is a target for the probing feature on C and moves the SpecCP. This would correctly derive the

grammatical example in (66):

- (66) Was für eine Prinzessin hat denn was für einen Frosch geküsst?  
 was for a princess has PRT was for a frog kissed  
 'What kind of princess kissed what kind of frog?'

If the *wh*-feature does not percolate, the *What* is copied and merged in SpecCP. Nunes' (2004) chain reduction algorithm makes sure that only the highest copy is pronounced while all other copies are deleted. As a result, the copy of *what* in the subject position and in the object position are deleted, as illustrated in (67).



It is easy to see how the convergence of the derivation hinges on the copy of *what* in the object position. If it were not available, the feature on C could not be checked. This is exactly the scenario in non ATB *was-für* split contexts, when extraction out of island takes places, hence the ungrammaticality of (57-a) and (58-a). The SM

step salvages the derivation.

### 3.8 Conclusion

This chapter summarized the first set of experiments on subject island effects in German. Data from a number of studies on *was-für* split converge on the conclusion that extraction out of subjects is degraded compared to extraction out of objects and that these subject island effects are independent of freezing effects. We provided a number of arguments that the patterns of acceptability we find are in fact a reflection of an underlying grammatical difference. Factors like information structure and parsing certainly play a role in acceptability studies but the body of data we gathered seems to convincingly rule out the possibility that all gradience solely stems from these extra-grammatical factors.

Theoretically, we have argued the MSO provides a straightforward account for the asymmetries we found, under a slight modification of the LCA. *Essentially, complements are the preferred to domain for subextraction.* We emphasized the point that a grammatical constraint always leads to a decrease in acceptability but does not necessarily lead to full unacceptability. We also noted that MSO predicts freezing of moved complements but has nothing to say about the additional decrease in acceptability of extraction out of moved specifiers.

Finally, we discussed ATB *was-für* split, a phenomenon not discussed so far in the German literature. We saw that ATB movement of *was* can salvage island violations in a way similar to other instances of ATB-movement and parasitic gap constructions. We provided an analysis in terms of Sidewards Movement.

In the following chapter we will turn to a detailed experimental investigation of subextraction out of sentential domains in German. We will conclude that the results we found provide further evidence for the existence of the CED in German.



## Chapter 4

### Extraction out of non-finite clauses in German

#### 4.1 Introduction

In this chapter we will investigate wh-extraction out of non-finite clauses in German. We will first summarize the discussion in the theoretical literature and conclude that more careful experimental elicitation of the facts is warranted. In particular, we will not only look at extraction out of sentential subjects in isolation, but compare them to extraction out of sentential objects as well. We will arrive at the same conclusion as in our *was-für* split experiments: Extraction out of subjects is degraded as compared to extraction out of objects.

#### 4.2 Background

The question of whether German allows wh-extraction out of sentential subjects has occupied syntacticians at least since the early eighties. The first more detailed discussion of the facts can be found in Haider (1983), who argues that German does not obey the subject condition.

- (1) a. Welchen Polizisten glaubst du würde damit zu täuschen selbst  
 which.ACC policeman think you would with.it to trick even  
 diesem Gauner schwerfallen?  
 this.DAT crook fall.hard  
 '(\*)Which policeman do you think that tricking would be hard even for  
 this crook?'
- b. Welches Buch meinen Sie ist heuer zu praemieren beschlossen  
 which book think you is this.year to award decided  
 worden?  
 been  
 '(?\*)Which book do you think (it) was decided to give an award to this  
 year?'
- [Haider (1983), p. 94-95, ex. (17) and (18)]

Working in Kayne's Connectedness framework, Haider attributes the difference between English and Dutch on the one hand, where subjects are islands for extraction, and German, on the other hand, to be a consequence of the obligatory subject raising in English and Dutch to an ungoverned position. The subject in German stays within the g-projection of V, and the trace of the subextraction satisfies the ECP. Note that Haider's position is descriptively identical to Stepanov's point of view some 20 years later: there is nothing illicit about extraction out of subjects *per se* but subjects become opaque if they are moved as a result of freezing effects.

Sternefeld (1985) argues that Haider's examples are not genuine cases of extraction out of subjects because they involve unaccusative and passive predicates, where the structural subject is an underlying object. If this is controlled for, the subject condition also holds in German:

- (2) a. \*Wem gehört sich nicht, Briefe nicht zu beantworten.  
       who.DAT befit self not letters not to answer'  
       '(\*)Who is not answering letters to inappropriate'  
   b. \*Was bezeugt zu finden guten Orientierungssinn?  
       what attest to find good sense.of.orientation  
       '(\*)What does to find indicate a good sense of orientation?'  
       [Sternefeld (1985), p. 403, ex. (27)]

Note that Sternefeld's and Haider's examples are not minimal pairs in two relevant respects. First, Sternefeld uses non non-d-linked while Haider uses d-linked wh-arguments. It has been well established that d-linking significantly improves the extractability of wh-elements<sup>1</sup>. Second and more interestingly, it has been pointed out by Grewendorf (1989) that Haider's and Sternefeld's examples differ in as far as the former uses an auxiliary in the V2 position while the latter uses a main verb. Grewendorf argues that this is the crucial difference determining the acceptability of this construction:

- (3) a. Wessen Beispiele hat zu analysieren dich mehr frustriert - Haider's  
       whose examples has to analyze you more frustrated - Haider's  
       oder Sternefelds?  
       or Sternefeld's  
       '(\*?) Whose examples did it annoy you more to analyze - Haider's or  
       Sternefeld's?'  
   b. \*Wessen Beispiele frustrierte dich zu analysieren mehr - Haider's oder  
       whose examples frustrated you to analyze more - Haider's or  
       Sternefelds?  
       Sternefeld's  
       '(\*?) Whose examples did it annoy you more to analyze - Haider's or  
       Sternefeld's?'  
       [Grewendorf (1989)]

In (3-a) the V2 position is filled with the auxiliary *hat* ('has'), and the wh-extraction

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<sup>1</sup>See Pesetsky (1987) and Cinque (1990) for theoretical discussion and Sprouse (2007) for experimental evidence confirming the ameliorative effect of d-linking.

out of the sentential subject is judged acceptable. In (3-b) on the other hand the V2 position is occupied with the main verb *frustrierte* ('frustrated'), and the wh-extraction out of the sentential subject is judged to be illicit. This is quite a peculiar observation since it is not immediately obvious why the islandhood of the subject should depend on which element the matrix C is filled with.

Haider (1993:159) acknowledges this contrast but rejects a grammatical explanation of it. He contemplates a parsing account, arguing that the verbal bracketing in the case of auxiliary-participles - present in (3-a) and absent in (3-b) - somehow facilitates the processing of the filler-gap dependency. This entails that the parsing difficulty should disappear with separable particle verbs, which also involve a bracketing from the V2 position to the final position in the clause. Haider claims that this prediction is indeed borne out. He does not give minimal pairs but judges extraction out of subjects involving particle verbs with a (?), while assigning ?? to different examples with non-separable verbs.<sup>2</sup>

- (4) a. ??In welche Akten verwehrte Einsicht zu nehmen dir            der Richter?  
           in which files    denied    access    to take    you.DAT the judge  
           '(?\*)In which files did the judge deny you access?'  
           [Haider 1993, 159: ex. (81b), my translation, *JJ*]  
       b. (?)Worueber fiel mit dir            zu plaudern keinem            ein?  
           about.what    fell with you.DAT to chat            noone.DAT in  
           '(?\*)What did chatting about with you occurred to nobody?'  
           [Haider 1993, 159: ex. (83a), my translation, *JJ*]

This is another domain where purely introspective gathering of judgments reaches

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<sup>2</sup>Quite oddly, Haider also assigns a (?) to the following example which does not contain a separable verb. This makes his use of question marks and double question marks even more mysterious.

- i.        (?)Worüber gelang mit dir            zu plaudern keinem?  
           about.what succeed with you.DAT to chat            noone.DAT  
           'What did chatting about with you nobody succeed?'  
           [Haider 1993, 159: ex. (83c), my translation, *JJ*]

its limits. Haider is careful to qualify his statement stating that the parsing burden ‘*sollte*’ (‘should’) disappear with particle verbs. Then he goes on to give a contrast between (?) and ?? between two examples that are not minimal pairs. At no point does he explicate what (?) or ?? mean in a purely binary view on grammaticality, which he clearly advocates for in other places (see Haider 1993:159 and the discussion in section 2.2.4). In section 4.5, we will test Haider’s claim and give some content to the question marks and test whether the parsing burden only *should* disappear or actually does.

Haider (1983) also argues that extraction out of extraposed sentential subjects is only possible if the extraction site is not filled with an expletive, which he argues to block the formation of a licit chain formation (see Haider (1983) for the details of the account).

- (5) a. \*Das ist ein Klavier, das es mir Spaß macht zu spielen.  
           that is a piano that it me fun makes to play  
           ‘That’s a piano which it is fun for me to play’  
       b. Das ist ein Klavier, das mir Spaß machte vierhändig zu spielen.  
           that is a piano which me fun made four-handed to play  
           ‘That’s a piano which it was fun for me to play four-handed’  
           [Haider (1983), p. 100, ex. (30a) and (31)]

To sum up, it seems as if the islandhood of sentential subjects depends on a number of factors: (i) whether the subject is in-situ or in a derived position, (ii) whether the matrix predicate is unaccusative or unergative, (iii) whether the extracted wh-element is d-linked or not, (iv) whether the V2 position is filled with a main verb or an auxiliary and (v) whether the sentential subject is extraposed (and whether the expletive *es* is present).

In the following sections we will discuss a sequence of acceptability judgments studies on extraction out of sentential subjects. In 4.3 we will investigate the overall acceptability of subextraction out of sentential arguments and the role rightward

extraposition plays. We will see that extraction out of subjects is significantly degraded compared to objects. Extraposition does not influence the extractability for objects while it marginally does for subjects. Furthermore the presence of the expletive *es* does not have an effect on the acceptability of subextraction out of extraposed subjects, contrary to Haider’s judgments. The experiment in section 4.4 confirms Grewendorf’s insight that auxiliaries in the V2 position facilitate subextraction as compared to main verbs. This, however, is not a quirk of subject subextraction but holds for extraction out of sentential arguments in general. Finally, section 4.5 disconfirms Haider’s speculation that the acceptability of subextraction is tied to verbal bracketing.

### **4.3 Experiment 5 - Sentential subjects vs. sentential objects**

#### **4.3.1 Introduction**

This experiment is designed to shed light on the overall acceptability of subextraction out of sentential arguments and the role rightward extraposition plays. We will again find our familiar and beloved subject/object asymmetry. Extraposition turns out to have a different effect on subjects compared to objects.

#### **4.3.2 Methodology and design**

32 speakers participated in this study, and the same experimental protocol was followed (again, the reader is referred to section 2.2.2 for the details). The design had a 2x2x2 structure manipulating the factors SUBJECT/OBJECT, EXTRACTION and EXTRAPOSITION. This yields the following 8 conditions:

- (6) a. Die Diplomarbeit zu schreiben hat die Studentin gelangweilt.  
 The MA to write has the student.FEM bored  
 'Writing the MA has bored the student.' [sub, -ext]
- b. Welche Arbeit hat denn zu schreiben die Studentin gelangweilt?  
 Which paper has PRT to write the student.FEM bored  
 'Which paper has writing bored the student?' [sub, +ext]
- c. Die Studentin hat die Diplomarbeit zu schreiben vorgehabt.  
 The student.FEM has the MA to write planned  
 'The student planned to write the MA.' [obj, -ext]
- d. Welche Arbeit hat denn die Studentin zu schreiben vorgehabt?  
 Which paper has PRT the student.FEM to write planned  
 'Which paper has the student planned to write?' [obj, +ext]
- e. Es hat die Studentin gelangweilt die Diplomarbeit zu schreiben.  
 it has the student.FEM bored the MA to write  
 'It bored the student to write the MA.' [sub, -ext, +ep]
- f. Welche Arbeit hat (es) denn die Studentin gelangweilt zu schreiben?  
 Which paper has (it) PRT the student.FEM bored to write  
 'Which paper did it bore the student to write?' [sub, +ext, +ep]
- g. Die Studentin hat vorgehabt die Diplomarbeit zu schreiben.  
 The student.FEM has planned the MA to write  
 'The student planned to write the MA.' [obj, -ext, +ep]
- h. Welche Arbeit hat denn die Studentin vorgehabt zu schreiben?  
 Which paper has PRT the student.FEM planned to write  
 'Which paper did the student plan to write?' [obj, +ext, +ep]

Note that we cannot construct ideal minimal pairs in this domain because the predicates that take non-finite sentential subjects and the predicates that take sentential objects do not overlap. We thus used psych verbs in the subject conditions and subject control verbs in the object condition.<sup>3</sup> This is a potentially confounding

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<sup>3</sup>Sentential subject predicates included verbs like: *langweilen* ('bore'), *belasten* ('strain'), *erfreuen* ('delight'), *verärgern* ('annoy'), etc. and sentential objects predicates verbs like: *planen* ('plan'), *verlautbaren* ('announce'), *veranlassen* ('bring about'), *vorhaben* ('intend'). See the appendix for the full list of stimuli.

Note that it is possible to construct minimal pairs using finite clauses with predicates like *beweisen* ('prove'), *bestimmen* ('determine') or *nahelegen* ('suggest'). Extracting out of finite

factor to be borne in mind when analyzing the results.

We used d-linked WH-arguments throughout all the conditions to give extraction the best possible chance. As in the *was-für* split experiments, the particle *denn* ('indeed') marks the VP-boundary (cf. Diesing 1992 and Webelhuth 1989 for German, Pollock 1989 for French and English).

### 4.3.3 Predictions

It is a matter of theoretical controversy what the base position of sentential arguments in German is and how extraposition is derived. We will not go into the intricacies of this debate here. What is relevant for our discussion is the question whether the non-extraposed sentential arguments in (6-a) to (6-d) have been base-generated in VP or have come to surface in this position as a result of movement. If the latter were the case we would expect to find some sort of freezing effects. Conversely, we may ask whether the extraposed sentential arguments in (6-e) to (6-h) have been moved to some rightward adjoined position or were base-generated there. If the former were the case, we would also be interested in whether this movement took place in narrow syntax or at PF. If it happened in narrow syntax we would expect freezing effects since the movement would presumably precede the wh-extraction. If it took place at PF we would not expect any such effects.

All these logical possibilities have been put forth in some form or another in the literature (see Buring & Hartmann 1997 for an overview). Even though the main point of this study is to test whether German shows subject/object asymmetries for extractability, we may also shed some light on this discussion. There are a number of possible outcomes, each of which would be potential evidence for a specific theoretical position. In the following we will provide a (non-exclusive) list

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clauses with such predicates, however, creates some sort of factive islands and is very marginal for most speakers, which prompted us not to use them as our test items. We did, however, add some of these cases as fillers, and we also found a subject/object asymmetry, albeit very low on the scale (1.62 vs. 2.29,  $p < .001$ )



of some possible scenarios, indicating the theoretical implications (note that 'base' and 'extraposed' are purely descriptive terms referring to the overt position of the sentential argument and do not imply any theoretical stance).

(7) WH-Extraction out of sentential arguments - possible scenarios:

a. **no sub/obj asymmetry in base or extraposed position**

sentential arguments are base-generated in VP, extraction is possible (as predicted by Stepanov). Extraposition happens after the extraction has taken place (either late in syntax or post-syntactically) and does not have an effect on the extractability

b. **sub/obj asymmetry in base, no asymmetry when extraposed**

Sentential arguments are base-generated in VP and extraction shows classical CED effects (against Stepanov). The extraposed clauses are also base-generated (cf. Webelhuth 1989) in complement positions and thus do not show an asymmetry for extraction.

c. **sub/obj asymmetry both in base and extraposed position**

Sentential arguments are base-generated in VP and extraction shows classical CED effects (against Stepanov). Extraposition is rightward movement to some adjoined position after the extraction has taken place.<sup>4</sup> Hence only the base position determines the permeability of a domain, extraposition does not change this status. Buring & Hartmann (1997) argue for this position based on extraction, binding and reconstruction data.

We will see in the next section that our results are compatible with (7-c) but do not provide conclusive evidence for it. We find a subject/object asymmetry both

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<sup>4</sup>This is essentially the account argued for recently by Drummond (2009). It is unclear, however, how syntactic movement to the right is reconcilable with the LCA.

with and without extraposition. However, subextraction out of subjects is slightly improved with extraposition, yet still degraded compared to objects.

#### 4.3.4 Results

In both the extraposition and the non-extraposition cases, extraction out of subject clauses is significantly degraded in comparison to extraction out of objects. There is a strong interaction effect for the factors SUB/OBJ and EXTRACTION. Figure 4.1 and Table 4.1 show the sample means, Table 4.2 shows the results of a three-way repeated measures ANOVA.

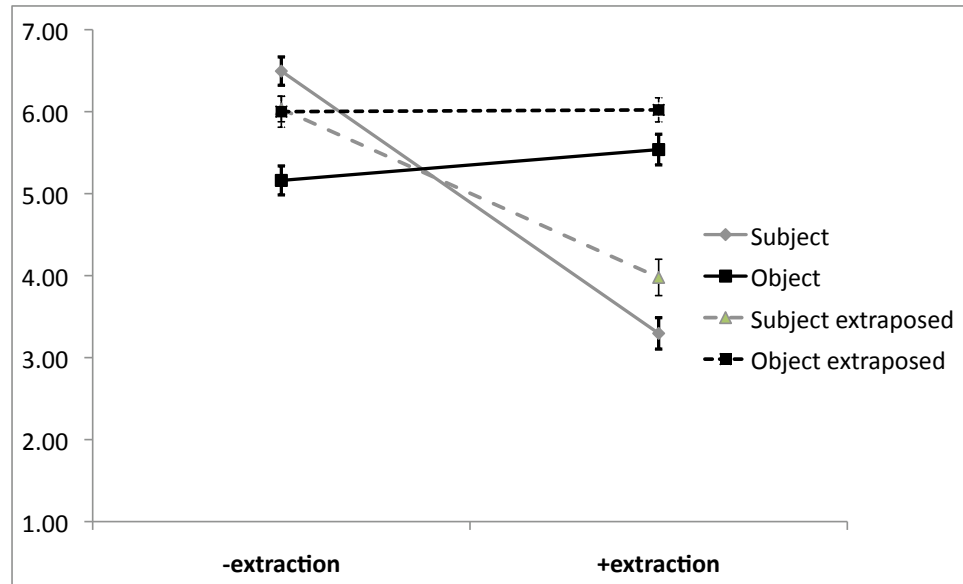


Figure 4.1: Results

Table 4.1: Means

	Non Extraposed	Extraposed
Sub, -ext	6.49	6.02
Sub, +ext	3.29	3.98
Obj, -ext	5.14	5.99
Obj, +ext	5.52	6.01

Table 4.2: ANOVA

	<b>F</b>	<b>p</b>
SUB/OBJ*EXTRACTION	146.4	***
EXTRACTION	97.2	***
SUB/OBJ	47.5	***
EXTRAPOSITION	11.9	**
EXTRAPOSTION*EXTRACTION	2.4	.122

There is both a SUB/OBJ main effect as well as an interaction effect for SUB/OBJ x EXTRACTION. In other words, extraction out of a subject incurs a larger cost than extraction out of the object. The solid black line in Figure 4.1 refers to the non-extraposed object condition. This line indicates even a slight increase for extraction as compared to no extraction. Pair-wise comparisons revealed that extraction out of non-extraposed subject clauses is significantly degraded (3.29) in comparison to extraction out of non-extraposed objects (5.52) ( $t(1,92)=8.4$ ,  $p<.001$ ), while in the non-extraposed baseline conditions subjects (6.49) are preferred to objects (5.16) ( $t(1,92)=6.6$ ,  $p<.001$ ). This is a result of the fact that many speakers disprefer phonologically heavy constituents in preverbal object position, cf. (6-c). When the wh-argument is extracted, enough phonological weight is taken off the constituent to outweigh the negative effect of extraction, cf. (6-d). This effect evens out in the extraposition conditions as indicated by the dotted black line. Subject-object asymmetries for extraction are also found in the extraposed conditions (3.98 vs. 6.01,  $t(1,92)=7.44$ ,  $p<.001$ ).

What is the role of extraposition? Both the non-extraposed and the extraposed subject conditions (the grey lines in Figure 4.1) indicate a strong decrease in acceptability for extraction. There is a marginally significant main effect for the factor EXTRAPOSITION, i.e. speakers slightly prefer extraposing sentential arguments across the various conditions, but there is no interaction effect between EXTRAPOSITION x EXTRACTION. This suggests that extracting out of extraposed sentential

arguments does not change the pattern found in the base cases. The base position solely determines the status of the extractability.

However, extraposition affects sentential subjects and objects differently. For this reasons we conducted two ANOVA subanalyses for subjects and objects, measuring the effects of the factors EXTRACTION and EXTRAPOSITION separately for the two argument types. The results are summarized in Tables 4.3 and 4.4.

Table 4.3: ANOVA subanalysis for sentential subjects

	F	<i>p</i>	partial $\eta^2$
EXTRACTION	236.604	***	.722
EXTRAPOSITION	.382	.538	.004
EXTRAPOSTION*EXTRACTION	12.738	**	.123

Table 4.4: ANOVA subanalysis for sentential objects

	F	<i>p</i>	partial $\eta^2$
EXTRACTION	1.434	.234	.15
EXTRAPOSITION	15.782	***	.146
EXTRAPOSTION*EXTRACTION	1.214	.273	.013

It turns out that there is an EXTRACTION main effect only for subjects and an EXTRAPOSITION main effect only for objects. Furthermore, we find an EXTRAPOSTION x EXTRACTION interaction effect only for subjects but not for objects. The partial  $\eta^2$  square values measure the effect size, i.e. the proportion of the variance that is accounted for by the independent variable.<sup>5</sup> Both the EXTRAPOSITION main effect for objects and the EXTRAPOSTION\*EXTRACTION interaction effect for subjects are medium sized.

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<sup>5</sup>Following convention, .01 is considered a small effect, .09 a medium effect, and .25 a large effect (cf. Sprouse 2007, Weskott & Fanselow 2008).

### 4.3.5 Discussion

Our results confirm that there is significant asymmetry with respect to the extractability of wh-elements between sentential subjects and objects. Subextraction out of sentential subjects is significantly degraded, as expected under the CED. A few aspects of the data deserve closer discussion.

The object non-extrapolated baseline condition, (6-c), is degraded compared to the extraction counterpart, (6-d). This is peculiar at first glance, for we expect the creation of a filler-gap dependency to cause a higher processing load which normally manifests itself in decreased acceptability, a well-established observation in the sentence processing literature (eg. Gibson 1998) and also what we found in the *was-für* split experiments. However, there is an interfering factor in the construction at hand. Speakers quite strongly disprefer non-extrapolated sentential objects, which is likely to be caused by a reluctance to place phonologically heavy constituents in the *Mittelfeld*. If the d-linked wh-phrase is moved out of the sentential object and replaced by a trace, this phonological weight is lifted significantly. This outweighs whatever cost the filler-gap dependency incurs. This explanation is corroborated by the fact that the decreased acceptability of the object baseline condition disappears when the sentential object is extrapolated, as in (6-g). Extrapolation, however, has no effect on the acceptability of the extraction. Wh-subextraction is judged as highly acceptable no matter whether the sentential object is extrapolated or not.

The same phonological heaviness effect is not found with sentential subjects. Here extrapolation is even slightly dispreferred in the baseline condition, which might be due to the fact that the sentence starts with an expletive, as in (6-e). Unlike in the case of objects, extrapolation does affect the permeability of sentential subjects. Extraction out of extrapolated sentential subjects, (6-f), is disproportionately less degraded than extraction out of the non-extrapolated counterpart, (6-b). Both extractions, however, are still worse than objects.

It is not straightforward to determine the implications of the results for the theory of extraposition. The fact that extraposed sentential subjects allow extraction more easily might point to the fact that they are in fact base-created as complements, as argued for by Webelhuth (1989). Recall, however, that this is a much smaller effect than the subject/object asymmetry. The residual degradation compared to objects could be related to the different matrix predicates. Alternatively, we could follow Buring & Hartmann (1997) and assume that extraction always originates from the base position of sentential subjects, while extraposition is a post-syntactic operation.

#### 4.3.6 Conclusion

What we take away from this experiment is that we find a strong subject/object asymmetry, no matter whether the non-finite sentential arguments are extraposed or not. This again leads us to conclude that object, i.e., complements, are the preferred extraction domains. Let us now turn to some other factors that have been argued in the literature to influence the acceptability of these constructions.

### 4.4 Experiment 6 - Auxiliaries vs. Main verbs

#### 4.4.1 Introduction

In our overview of the discussion on German subject islands in the theoretical literature in section 4.2, we saw that Grewendorf (1989) adds an intricate piece of data he takes to be the crucial factor in deciding whether German allows wh-extraction out of non-finite subjects or not. His observation was given in (3), repeated as (8).

- (8) a. Wessen Beispiele hat zu analysieren dich mehr frustriert - Haider's  
 whose examples has to analyze you more frustrated - Haider's  
 oder Sternefelds?  
 or Sternefeld's  
 '(\*) Whose examples did it annoy you more to analyze - Haider's or  
 Sternefeld's?'  
 b. \*Wessen Beispiele frustrierte dich zu analysieren mehr - Haider's oder  
 whose examples frustrated you to analyze more - Haider's or  
 Sternefelds?  
 Sternefeld's  
 '(\*) Whose examples did it annoy you more to analyze - Haider's or  
 Sternefeld's?'

In (8-a) the V2 position of the main clause is filled with the auxiliary *hat* ('has') and the extraction of the wh-element *wessen Beispiele* ('whose examples') out of the sentential subject is acceptable. (8-b) only differs in that the matrix V2 position is filled with the main verb *frustrierte* ('frustrated') and the sentence is judged ungrammatical by Grewendorf. He argues that this is the crux of the prior controversy concerning the status of subject islands in German. While Haider (1983) uses auxiliaries and judges examples of this kind to be good, Sternefeld (1985) uses main verbs and reports these cases to be out.

This is a beautiful example for seeing the binary view on grammaticality at work. Clearly, if the two sentences in (8) are presented side by side, and a German speaker is asked to assign each sentence the label *good* or *bad*, *acceptable* or *unacceptable*, *well-formed* or *not well-formed* etc. most speakers will find that there is a contrast between the two, and deem (8-b) a little worse than (8-a). The linguist will happily conclude that (8-a) is *good* while (8-b) is *bad*.

Recall from our discussion in section 2.2 that this reasoning can lead to a skewed view of the facts. Shoving every sentence in either the 'good' or the 'bad' drawer misses important aspects of the data. We are also interested in (i) the extent

to which two sentences differ from each other and (ii) how each of them compares to other sentences. So Grewendorf’s observation is highly interesting and clearly in need of an explanation, but the conclusions he draws from it are misleading: German allows extraction out of subjects as long as the matrix C position is filled with an auxiliary. He then constructs a complicated story in terms of government (which we will not go into here) to account for this alleged grammatical difference.

What he does not check, however, is whether this contrast is specifically related to subject islands or extends to other islands. Most importantly, he does not investigate whether this is a general property of question formation in German even in non-island contexts. These would be highly relevant facts to collect to get a better idea of whether we are dealing with a somewhat unexpected constraint in the grammar of German, or whether this effect results from a different source such as parsing. This is in no way to discredit Grewendorf’s work, which we think is full to the brim with insightful observations and keen theoretical proposals. What the reader should take away from this digression, however, is that the dichotomy doctrine of grammaticality can blind researchers and prevent them from asking further questions as well as gaining a more thorough picture of a given phenomenon.

#### 4.4.2 Design and Methodology

In our previous experiment we found that there is an asymmetry in acceptability between extraction out of sentential subjects as compared to extraction out of sentential objects. While the former are often judged acceptable when a binary categorical distinction is imposed on the speakers, using a wider and more flexible scale reveals that speakers perceive them as degraded as compared to the object conditions. Grewendorf claims to have detected the crucial factor that marks the threshold between grammatical and ungrammatical, i.e. extraction out of subjects is grammatical when the V2 position is filled with an auxiliary, and ungrammatical



when it is occupied by a main verb. In what follows, we will subject this claim to further scrutiny.

We tested whether this is a peculiarity of extracting out of subjects, or whether it also holds for extraction out of objects. The experiment had a 2x2 design with the factors SUB/OBJ and MAIN/AUX, which gives us the following stimuli:<sup>6</sup>

- (9) a. Welche Sonate hat denn den Pianisten zu spielen gelangweilt?  
 which sonata has PRT the.ACC pianist to play bored  
 'Which sonata did it bore the man to play?' [sub, aux]
- b. Welche Sonate langweilt denn den Pianisten zu spielen?  
 which sonata bored PRT the.ACC pianist to play  
 'Which sonata did it bore the man to play?' [sub, main]
- c. Welche Sonate hat denn der Pianist zu spielen geplant?  
 which sonata has PRT the pianist to play planned  
 'Which sonata did the pianist plan to play?' [obj, aux]
- d. Welche Sonate plant denn der Pianist zu spielen?  
 which sonata plan PRT the pianist to play  
 'Which sonata does the pianist plan to play?' [obj, main]

23 native speakers of German were tested. The by now familiar experimental protocol was followed.

#### 4.4.3 Results

As in our previous experiments we find a strong main effect for the factor SUB/OBJ, i.e. extraction out of objects is preferred over extraction out of subjects. Grewendorf's generalization, according to which a main verb in the V2 position decreases acceptability in the case of extraction out of subjects, is also confirmed. Furthermore, we find that there is a marginally significant main effect for the factor MAIN-

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<sup>6</sup>(9-d) was changed into present tense since simple past tense 'plante' is rarely used in spoken varieties of Austrian German, the dialect most of the participants spoke.

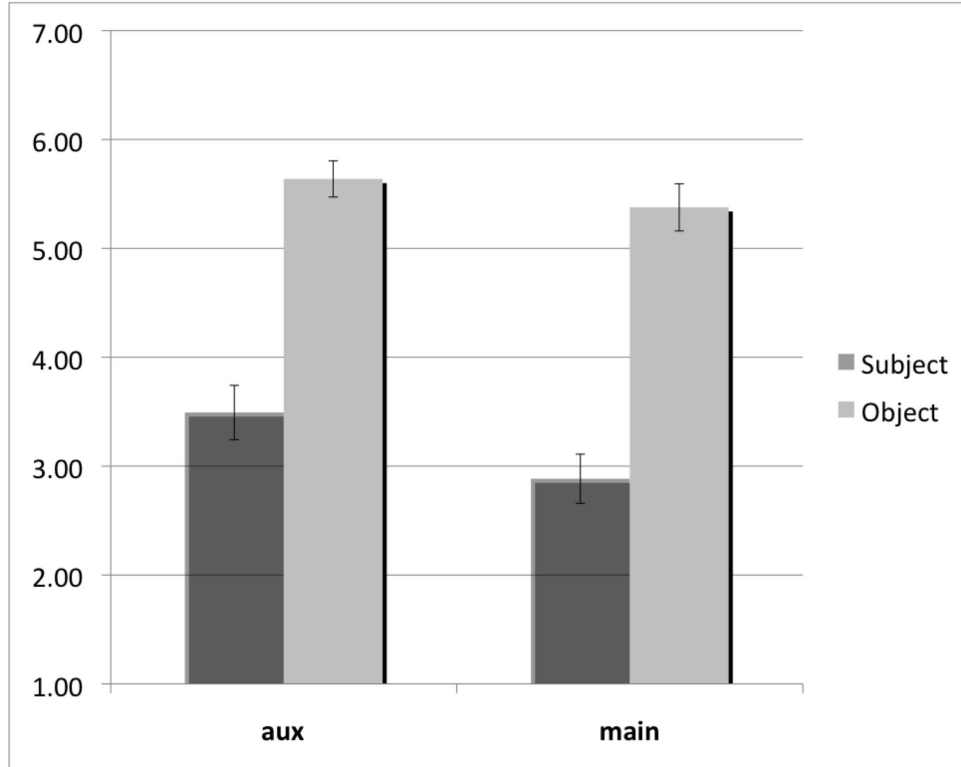


Figure 4.2: Effects of element in V2 position on extraction

AUX across the board. A pairwise comparison shows that the main vs. auxiliary difference is only significant for subject ( $t(1,69)=1.81$ ,  $p = .036$ ) but not for objects ( $t<1$ ).

Interestingly, we do not find an interaction effect between the two factors, i.e. using main verbs leads to a decrease both with subjects and objects and does not affect one condition disproportionately. This is summarized in Figure 4.2, the descriptive statistics in Table 4.5 and the ANOVA results in Table 4.6.

#### 4.4.4 Discussion

Our results indicate that, *ceteris paribus*, the acceptability indeed drops if the auxiliary in the V2 position of the matrix clause is replaced with a full verb. While we observe this trend across the board it only reaches significance in the case of extraction out of subjects.

Table 4.5: Descriptive Statistics

	<b>Subject</b>	<b>Object</b>
auxiliary	3.49	5.64
main	2.88	5.38

Table 4.6: ANOVA

	<b>F</b>	<b><i>p</i></b>
SUB/OBJ	125.2	***
MAIN/AUX	7.6	*
SUB/OBJ X MAIN/AUX	.931	.338

We also find that the difference in acceptability between the main vs. auxiliary condition with subjects (the dark grey column in Figure 4.2) is much smaller than the overall difference between subjects and objects (the dark grey vs. the light grey bars). It is quite remarkable that Grewendorf (Haider 1993 follows his judgments) places the threshold between absolute grammaticality and absolute ungrammaticality exactly between those two conditions, given that the effect is relatively small. This seems like a rather arbitrary decision.

What can we make of the fact that there is only a significant difference between auxiliaries and main verbs in the subject case? Note that we do see a small trend in favor of auxiliaries even in the object case (5.64 vs. 5.38). A plausible interpretation might be that this difference is amplified in the subject conditions. The presence of another decreasing factor, i.e. the subject islandhood, makes the aux/main verb difference more visible. We will see something similar with extraction out of subjects in English in section 5.5.

What is the source of this aux vs. main verb difference? We can then resort to some sort of parsing or processing story, arguing that having the main verb in second position somehow makes it more difficult to retrieve the filler when we reach the gap site because there is a cost for storing the verb in memory. The exact

opposite prediction, however, according to which knowing the verb and its argument structure early could facilitate the retrieval of the wh-element is conceivable as well. We will have to leave this an open question. Suffice it to say, that if either processing story is the right path to take it seems even more arbitrary to place an absolute grammaticality threshold between extraction out of subjects with an auxiliary and extraction out of subjects with a main verb.

#### 4.4.5 Conclusion

To sum up the lessons learned from the experiment, we have reasons to believe that an account in terms of parsing is most likely to explain these effects, given that we see similar trends for both subjects and objects. But what exactly about parsing causes this asymmetry? (9-a) and (9-b) (just as (9-c) and (9-c)) differ in two respects: (i) the element that fills C, (ii) whether the predicate is separated or not. Either of these factors could be responsible for the difference in acceptability. The following experiment tries to tease these two differences apart and leads us to conclude that factor (i) but not factor (ii) is responsible for the effect.

### 4.5 Experiment 7 - Separable verbs

#### 4.5.1 Introduction

The purpose of this experiment is to follow-up the results of the study discussed in the last section, which showed that speakers disprefer main verbs in the V2 position when a wh-element is extracted. We hypothesized that this is an effect related to parsing. Now we would like to identify whether this is related to the fact that having an auxiliary in the second position implies having a two-part predicate. It is conceivable that the reoccurrence of the predicate close to the gap somehow facilitates parsing. If this is the case, we would expect the same facilitation with

other two-part predicates, such as separable verbs.

This explanation is also contemplated by Haider (1993:159), who argues that the parsing difficulty should disappear with separable particle verbs. He does not give minimal pairs but judges extraction out of subjects involving particle verbs with a (?), while assigning ?? to different examples with non-separable verbs.

- (10) a. ??In welche Akten verwehrte Einsicht zu nehmen dir            der  
           in which files    denied    access    to take    you.DAT the  
           Richter?  
           judge  
           'In which files did the judge deny you access?'  
           (Haider 1993, 159: ex. (81b), my glosses, *JJ*)
- b. (?)Worueber fiel mit    dir            zu plaudern keinem            ein?  
      about.what    fell with you.DAT to chat        noone.DAT in  
      'What did chatting about with you occurred to nobody?'  
      (Haider 1993, 159: ex. (83a), my glosses, *JJ*)

This is another domain where purely introspective gathering of judgments reaches its limits. Haider is careful to qualify his statement saying that the parsing burden 'sollte' ('should') disappear with particle verbs. Then he goes one to give a contrast between (?) and ?? between two examples that are not minimal pairs. At no point does he explicate what (?) or ?? mean in a purely binary view on grammaticality. It is the purpose of this study to give some content to the question marks and to test whether the parsing burden only *should* disappear or actually does.

## 4.5.2 Design and Methodology

Since we already established that the main/auxiliary asymmetry is found across the board irrespective of the extraction site, we only concentrate on extraction out of subject islands. We had a 2x2 design manipulating the factors SEPARABLE and EXTRACTION, which yields the following conditions:

- (11) a. Die Arbeit zu schreiben regt die Studentin auf.  
 the paper to write annoys the student up  
 'Writing the paper annoys the student.' [+sep, -ext]
- b. Welche Arbeit regt denn zu schreiben die Studentin auf?  
 which paper annoys PRT to write the student up  
 'Which paper does writing annoy the student?' [+sep, +ext]
- c. Die Arbeit zu schreiben ärgert die Studentin.  
 the paper to write annoys the student  
 'Writing the paper annoys the student.' [-sep, -ext]
- d. Welche Arbeit ärgert denn zu schreiben die Studentin?  
 which paper annoys PRT to write the student  
 'Which paper does writing annoy the student?' [-sep, +ext]

The verb *aufregen* ('annoy') in (11-a) and (11-b) is a separable verb, a *Partikelverb* in descriptive German grammar. Whenever the verb is raised to the V2 position, the particle obligatorily stays low in V creating a *Verbalklammer* ('verbal bracketing'). In (11-c) and (11-d) inseparable verbs are used. If verbal bracketing facilitates parsing, and the particle somehow aids the speaker to reconstruct the verb in its thematic position and thus also helps associate the sentential argument with the verb, we would expect to see a boost in acceptability as compared to the control condition where no such parsing aid is available. This hypothesis, however, is not borne out by the facts.

### 4.5.3 Results

Unsurprisingly, we found the usual main effect for the factor EXTRACTION. However, we found neither a main effect for the factor SEPARABLE nor an interaction effect between the two factors, as indicated by the almost perfectly parallel lines in Figure 4.3. We find that non-separable verbs are preferred by speakers across the

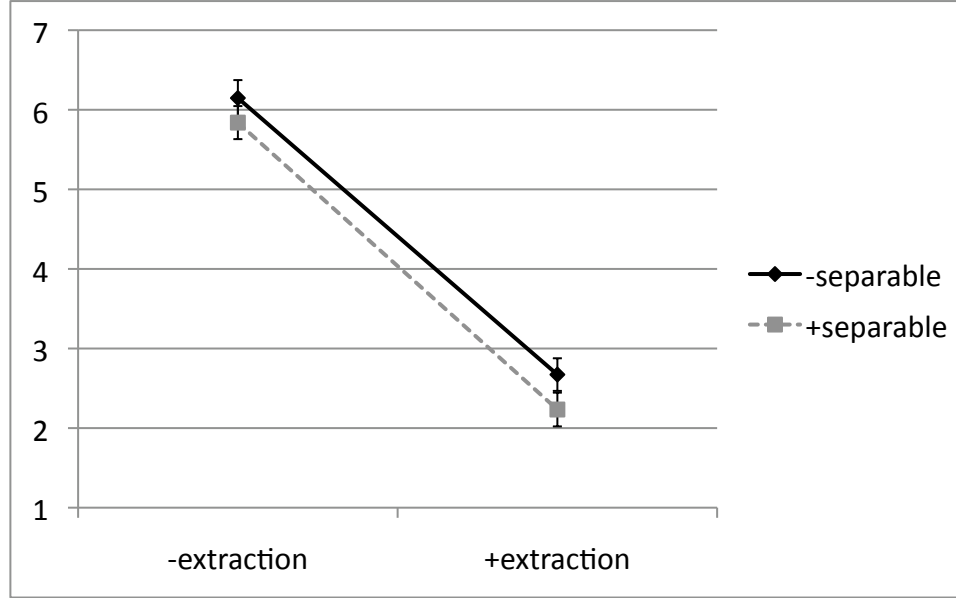


Figure 4.3: Results

board. Pairwise comparisons indicate that there is a marginally significant effect for the *+extraction* conditions ( $t(1,62)=1.49$ ,  $p=.069$ ) and only a non-significant trend in the *-extraction* conditions ( $t(1,62)=1.01$ ,  $p=.15$ ). See also the descriptive statistics in Table 4.7 and the ANOVA results in Table 4.8.

Table 4.7: Descriptive Statistics

	Mean	SD
-Sep, -Ext	6.15	1.62
-Sep, +Ext	2.67	1.61
+Sep, -Ext	5.84	1.78
+Sep, +Ext	2.23	1.58

Table 4.8: ANOVA

	F	p
SEPARABLE	2.5	.116
EXTRACTION	385.7	***
SEP x EXT	.029	.865

#### 4.5.4 Discussion

The lack of a main effect for the factor SEPARABLE and of an interaction effect between the two factors, suggests that verbal bracketing does not have any facilitating effect for the parser, contrary to Haider's hypothesis. We even see the opposite pattern, i.e. non-separable verbs receive better ratings. The fact that this is significant

only for the *+extraction* conditions is reminiscent of what we found in the previous experiment. An effect is amplified when it occurs at a lower range on the scale.

What seems to be responsible for the contrast between main verb and auxiliaries observed by Grewendorf and confirmed in the previous study is simply the position of the element that bears the semantic content. Jeff Lidz (p.c.) suggests that, in the main verb condition, storing the verb until the gap in the thematic position is reached puts a burden on the working memory. The parser then needs to reconstruct the trace of the head movement and associate it with the sentential argument. The reconstruction step is not needed in the auxiliary conditions, since the past participle that bears the semantic content of the predicate is adjacent to the sentential argument. No reconstruction of the head movement is needed. Having a verbal particle adjacent to the gap does not seem to facilitate the association with the verb, since reconstruction of the main verb still needs to take place.

The parsing account could lead to the inverse prediction as well. It is conceivable that having the thematic information early, i.e. when the main verb is in C, helps the parser integrate the arguments. Then we would expect a boost as compared to seeing the main verb late. This is essentially an empirical question as to which information is useful for the parser and which information is harmful. The results reported in this section suggest that the parser does not like to see the verb too early. However, frequency consideration - perhaps auxiliaries are more common in interrogative C than main verbs - might also play a role. In short, much further research in the processing of these constructions is needed to give a definite answer.

## 4.6 Conclusion

The experiments discussed in this chapter further fortified the view that objects allow subextraction more easily than subjects. We have tested experimentally certain factors that were singled out in the theoretical literature as affecting the overall



acceptability. In particular, we looked at extraposition, main verbs vs. auxiliaries in the V2 position and separable verbs. We thus aimed at providing a clean empirical foundation for theoretical accounts to be built on. In some cases our experiments have raised new questions about islands and wh-questions in general to be addressed by a collaborative effort by syntacticians and psycholinguists. However, while not all details of the acceptability patterns we found can be accounted for in terms of complement/non-complement asymmetries, it seems fair to say that the CED goes a long way towards capturing the basic patterns we found.

# Chapter 5

## Subextraction in English<sup>1</sup>

### 5.1 Background

In the first discussion of subject island, Ross (1967) covered a variety of cross-linguistic data. His primary language of investigation, however, was English. Recall from section 2.1.1.1 that he was careful to solely rule out extraction out of *sentential* subjects to allow in examples like the following:

- (1) Of which cars were the hoods damaged by the explosion?  
Ross, 1967 (p.242, ex. 4.253)

Chomsky (1973) extended Ross’s original constraint to exclude extraction out of subjects in general. After that, examples like (1) were buried in oblivion for a couple of decades and are only enjoying a renaissance in recent years. A small industry is prospering which specializes in collecting *prima facie* counterexamples to existing island constraints to disprove their existence. Subject islands have not been spared the bad press either.

Levine & Sag (2003), who are concerned with ruling out extraction out of subjects within the HPSG framework, mention the following examples, which they find surprisingly good:

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<sup>1</sup>The experiments discussed in sections 5.2, 5.3 and 5.4 are partially the result of a class project at the University of Maryland in Fall 2009. Big thanks go to the students in this class: Jeff Ackermann, Aleria Evans, Phil Glaser, Kassie Gynther, Grace Lavigne, Darren Samuels, Sarah Slavin, Sherrod Wright.

- (2) Levine & Sag 2003, fn. 6
- a. (?)There are certain topics that jokes about are completely unacceptable.
  - b. (?)There are certain dignitaries that my jokes about are always considered over the top.
  - c. (?)There are certain dignitaries that my talking to would be considered improper.

Sauerland & Elbourne (2002) claim that extraction out of passivized subjects in English is acceptable under certain conditions. Concretely, they argue that the raising of the subject to SpecTP can be delayed until PF and the subject can stay in its complement position, if a quantifier is present which scopes over the subject. Consequently, the subextraction is legitimate as it originates from a complement position. This - according to Sauerland & Elbourne - is illustrated by the following example:

- (3) ?That's the book that a different chapter of seems to have been assigned to every student.

Beatrice Santorini is dedicating parts of her website<sup>2</sup> to collecting real-life examples of island violations. Here are some of the apparent subject island violations she found attested:

- (4)
- a. And a desert is one of those entities, like virginity and sans serif typeface, of which the definition must begin with negatives.  
(David Quammen. 1985. Natural acts. A sidelong view of science and nature. New York: Laurel. 176.)
  - b. a letter of which every line was an insult  
(Jane Austen. 1981. The complete novels. New York: Gramercy. 84.)
  - c. Their conversation turned upon those subjects of which the free discussion had generally much to do in perfecting a sudden intimacy between two young ladies  
(Jane Austen. 1981. The complete novels. New York: Gramercy. 826.)
  - d. that voluminous publication, of which either the matter or manner would not disgust a young person of taste

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<sup>2</sup><http://www.ling.upenn.edu/~beatrice/examples/movement.html>, last accessed April 21, 2010

(Jane Austen. 1981. The complete novels. New York: Gramercy. 828.)

Most recently, Chomsky (2008:20) has changed his opinion on this issue since Chomsky (1973:249) and resuscitated the debate by arguing that unaccusative, passive and ECM subjects are not islands in English:

- (5) a. it was the CAR (not the TRUCK) of which [the (driver, picture) was found]
- b. of which car did they believe the (driver, picture) to have caused a scandal

It seems fair to say that the number of alleged counter examples to the subject condition is worrisome for both theories of freezing and the CED. However, there are a number of different issues with all of the above examples which have to be disentangled before we can continue our discussion. First, what kind of position are we actually subextracting from? Some of the examples above involve extraction from passive and unaccusative subjects. We know from our experiments on German that internal subjects allow extraction more easily than external subjects. However, English, unlike German, is widely agreed to disallow in-situ subjects. If subjects by necessity move to SpecTP in English, does it still matter whether the lower copy is a complement or a specifier or do we unequivocally expect freezing effects?

Second, many of the examples above involve pied-piping of the preposition. How can we be sure that genuine subextraction has taken place and that we are not dealing with some kind of hanging topic construction? The issue becomes more pressing when we slightly alter Santorini's examples by stranding the preposition (with all due apologies to Jane Austen). For most speakers, the acceptability of the sentence decreases dramatically:

- (6) a. ?\*And a desert is one of those entities, like virginity and sans serif type-face, which the definition of must begin with negatives.

- b. ?\*a letter which every line of was an insult
- c. ?\*Their conversation turned upon those subjects which the free discussion of had generally much to do in perfecting a sudden intimacy between two young ladies
- d. ?\*that voluminous publication, which either the matter or manner of would not disgust a young person of taste

Third, how reliable are our guesstimates about the status of these examples? Do they hold robustly across speakers? And most importantly, how do they contrast compared to subextraction out of objects? This chapter is dedicated to shedding light on these questions. In section 5.2 we will first investigate the role of Pied-Piping with subextraction out of subject and object DPs. We will also take a closer look in section 5.3 at whether ECM predicates somehow facilitate the extractability. We will then turn our attention to the contrast between extracting out of unergative and passivized subjects in section 5.4. Section 5.5 will revisit Sauerland & Elbourne’s intriguing cases where subject condition effects allegedly disappear when the raising of the subject can be delayed to PF for scopal reasons.

Following the practice of scientific papers of blatantly violating the rules of dramaturgy, we will scotch every chance of tension build-up and give away the bottom-line of our findings right away. Our results converge on the conclusion that subjects are islands and uniformly opaque domains. Neither passives, ECM-predicates nor obligatory scopal reconstruction can salvage them. The picture that emerges with pied-piping seems to support the point of view that fronted PPs can be construed as hanging topic constructions, which do not in fact involve subextraction (as advocated by Broeckhuis 2005).

## 5.2 Experiment 8 - Pied-piping in English

### 5.2.1 Introduction

We saw in the the introduction above that many of the alleged cases of licit subject subextraction involve Pied-piping of the preposition. We have noted that Ross in his original discussion did not formulate a more general and simpler constraint banning extraction out of subjects altogether but restricted it to *sentential* subjects. Let us take a closer look at his key example, repeated here:

- (7) Of which cars were the hoods damaged by the explosion?  
Ross, 1967 (p.242, ex. 4.253)

This example is not innocent for a number of reasons. First, Ross chooses to extract the the full PP and not NP stranding the preposition. Nothing in principle would disallow this extraction since p-stranding is a productive phenomenon in English.

- (8) ?\*Which cars were the hoods of damaged by the explosion?

For many speakers stranding the preposition significantly decreases the acceptability of the sentence. This is peculiar as most speakers of English generally prefer P-stranding to pied-piping of the entire PP (barring prescriptive considerations).

- (9) a. Which cars did the explosion damage the hoods of?  
b. ?Of which cars did the explosion damage the hoods?

This suggests that ?? is not a case of genuine extraction but rather some sort of hanging topic construction with an underlying structure such as (10).

- (10) Of which cars was it the case that the hoods of those cars were damaged by the explosion.

An argument for that construal is that, in an appropriate context, the DP *the hoods* can be replaced by a pronoun. The fronted PP is still acceptable even though pronouns do not normally take PP complements (a similar argument for Dutch is made by Broekhuis 2005).

- (11) There was a terrible explosion and the hoods of certain cars were damaged.
- a. Of which cars were they damaged?
  - b. \*Which cars were they of damaged?
  - c. \*They of the SUVs were damaged.
  - d. The hoods of the SUVs were damaged.

In (11-a) we see that *of which cars* may still be fronted even if the subject of the clause is pronominal. The impossibility of stranding the preposition in (11-b) strongly suggests that the PP did not originate inside the subject but was base generated in some left peripheral topic position. (11-c) illustrates that pronouns in English do not take PP complements, while this is fully acceptable for regular DPs as shown in (11-d).<sup>3</sup>

It seems like Ross chooses caution over simplicity in not proposing a general subject constraint. A constraint that only applies to sentential subjects, however, seems rather *ad hoc* and unlikely to be a foundational property of the grammar. It seems that Ross might have been a little too wary of not ruling out examples incor-

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<sup>3</sup>In addition, (7) is a passive sentence, and we generally assume that in passivization the overt subject starts out as the thematic object. In the framework Ross was working in, passivization is instantiated by an optional passive transformation rule. Nothing, in principle, would prevent Ross from assuming that the WH-question rule precedes passive formation. In that case, at the point of wh-extraction the overt subject would still be in object position, i.e. it would not be immediately dominated by S and the transformation could apply. This step has to be allowed by the system to generate extraction out of objects. Then the passive formation rule could apply, reordering the thematic object into the syntactic subject position. The structural analysis of the passive formation rule as given in Chomsky (1957) would have to be slightly modified, allowing passive transformation to apply to WH - Aux - NP - V - NP. As Howard Lasnik (p.c.) points out, however, that would run into empirical problems with sentences like *Which boys were arrested by Colonel Stumpi?* If WH-question formation preceded passive formation, the plural agreement on the verb would be unexpected. One could imagine optional ordering between the rules, but optional rule ordering was not part of the *Syntactic Structures* system. We will return to extraction out of passive subjects in section 5.4.

rectly. Genuine cases of extraction out of non-passivized unergative non-sentential subjects are generally agreed on to be unacceptable:

- (12) \*Who did a book about cause a scandal?

The following experiment investigates the role Pied-piping plays both with subextraction out of subjects and objects. We will see that the results make a construal of fronted PPs in terms of a base-generated hanging topic construction plausible.

### 5.2.2 Design and Methodology

We manipulate the factors SUB/OBJ, EXTRACTION and PIED-PIPING. This gives us the following conditions:

- (13)
- a. *subject, no extraction*  
Phil wondered whether a documentary about healthcare had swayed the voters last year.
  - b. *subject, pied-piping*  
Phil wondered about which topic a documentary had swayed the voters last year.
  - c. *subject, no pied-piping*  
Phil wondered which politician a documentary about had swayed the voters last year.
  - d. *object, no extraction*  
Phil wondered whether Scott had filmed a documentary about healthcare last year.
  - e. *object, pied-piping*  
Phil wondered which topic Scott had filmed a documentary about last year.
  - f. *object, no pied-piping*  
Phil wondered about which topic Scott had filmed a documentary last year.

As usual, we constructed 3 lexicalizations of every condition which were grouped into 6 lists using a Latin square design. We consistently used d-linked wh-phrases and extraction out of inanimate unergative subjects. We also added an adjunct at the end of the clause ('last year' in (13)) to preempt a possible prescriptive bias



against (13-e), which would have ended with a preposition. The prescriptive rule some speakers might remember as prohibiting ending sentences with a preposition would bias against this condition. It would also make the interpretation of the data more difficult as it would be unclear if the participants gave a rating according to their intuitions or consciously applied a prescriptive rule.

We added 2 subexperiments as well as fillers of all level of acceptability, which totalled in 82 items per participant. As usual, see the appendix for all stimuli and fillers. 37 native speakers of English were tested online.

### 5.2.3 Results

The results we find give us an interesting picture. While there is a huge subject/object asymmetry when the preposition is stranded, there is only a small effect with pied-piping. The descriptive results are given in Figure 5.1 and Table 5.1. The black lines represent the object and the grey lines the subject conditions. The solid lines are the *pied-piping* and the dashed lines the *p-stranding* conditions. We can clearly see that the solid lines are nearly parallel indicating that there is a SUB/OBJ main effect but no (or only a very small) SUB/OBJ x EXTRACTION interaction effect. The dashed lines, however, are non-parallel and indicate a very strong interaction effect.

Table 5.1: Descriptive results

	no extraction	+pied-piping	-p-stranding
Subject	6.24	3.29	2.51
Object	6.54	3.86	5.08

Furthermore, two 2 way repeated measures ANOVA subanalyses were conducted, which indicate that there is a highly significant SUB/OBJ x EXTRACTION interaction if the preposition is stranded. Even though there also is an interaction effect with

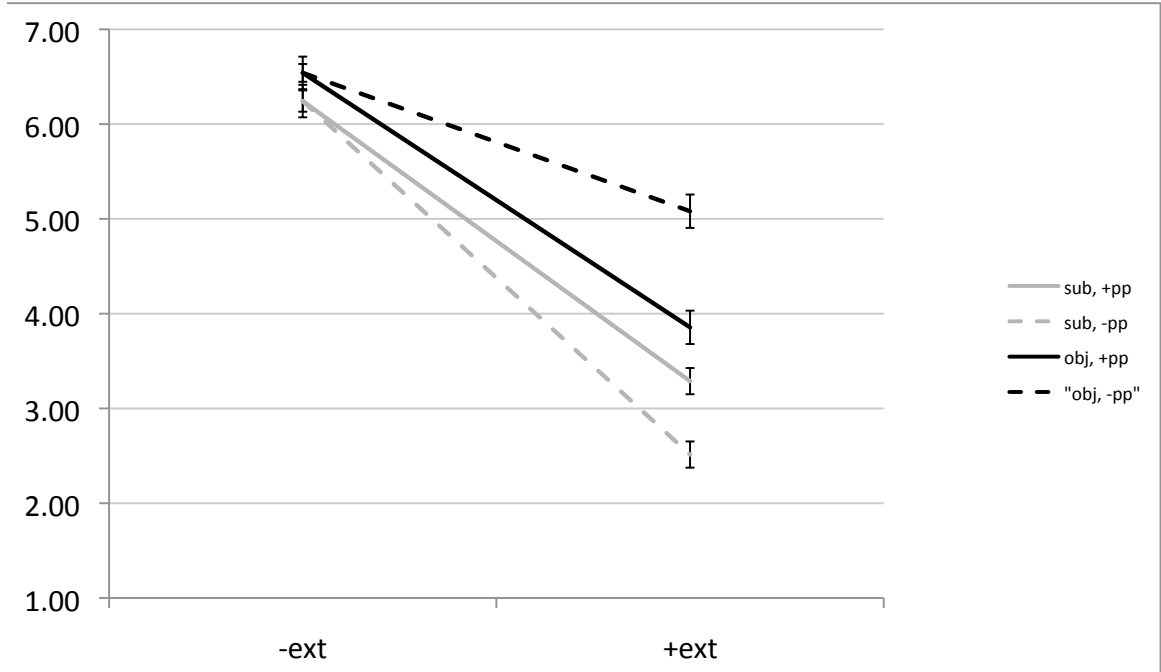


Figure 5.1: The role of pied-piping in subject subextraction in English

pied-piping, the effect size is much smaller in the *pied-piping* conditions compared to the p-stranding conditions. This is reflected in the drastic difference between the  $\eta^2$ -scores (.733 vs. .184).<sup>4</sup> This is also reflected in the pairwise comparisons. Both are significant but the effect is larger for p-stranding compared to pied-piping ( $t=2.36$  vs. 11.65).

Table 5.2: 2x2 ANOVA subanalyses

	Pied-piping			P-stranding		
	F	<i>p</i>	$\eta^2$	F	<i>p</i>	$\eta^2$
SUB/OBJ	140.566	***	.561	828.391	***	.883
EXTRACTION	477.326	***	.813	698.022	***	.864
SUB/OBJ*EXTRACTION	24.849	***	.184	302.715	***	.733

<sup>4</sup>Remember that the partial  $\eta^2$  measures the effect size, i.e. the proportion of the variance that is accounted for by the independent variable. Following convention, .01 is considered a small effect, .09 a medium effect, and .25 a large effect (cf. Sprouse 2007, Weskott & Fanselow 2008).

### 5.2.3.1 Distribution of the data

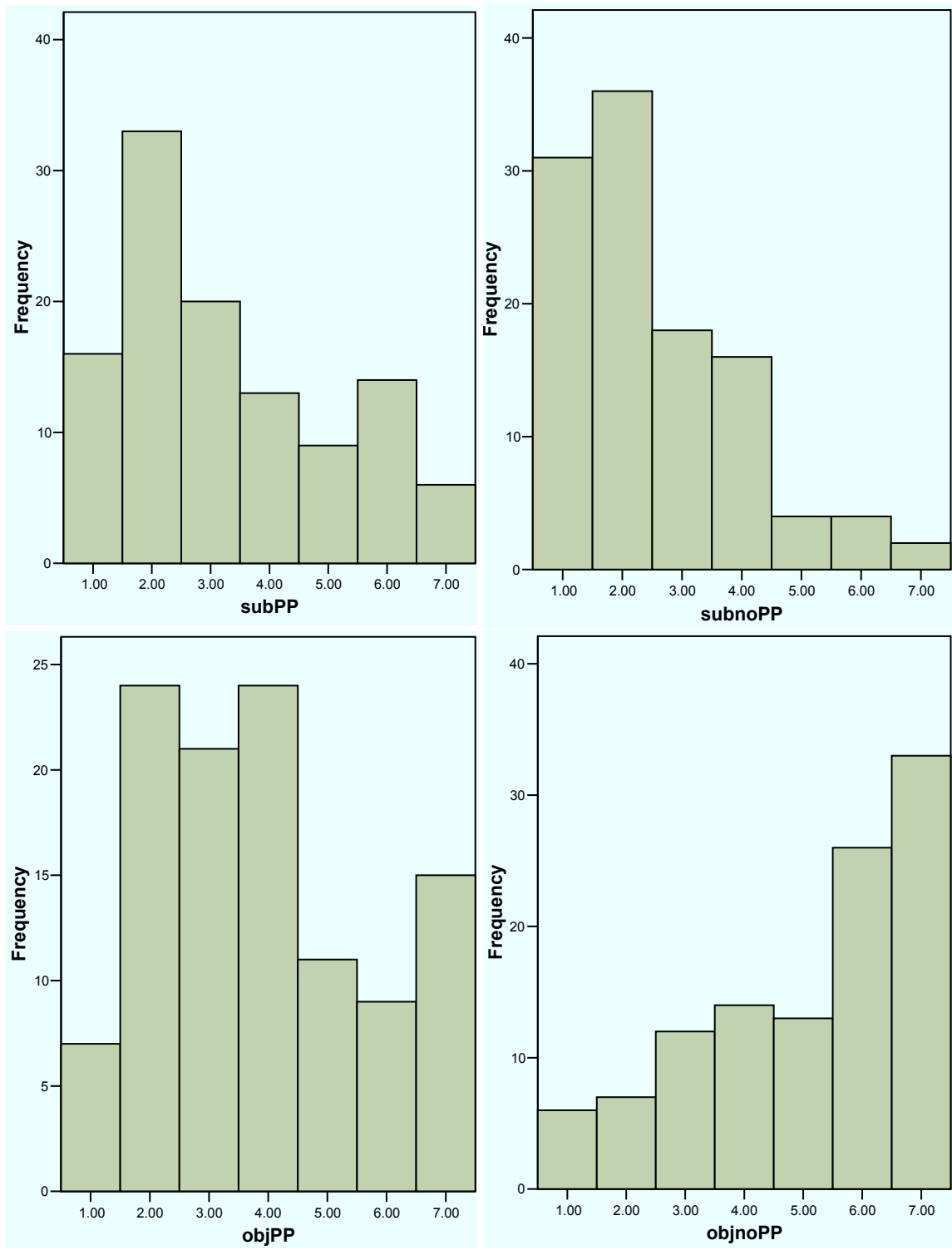
A more detailed look at the individual results suggests that they are representative of one grammar. While we observe the usual amount of variation in the data, 25 participants follow the same general pattern as the mean and 12 participants show a different pattern (i.e. about 68%). However, across the 12 participants who did not follow the pattern, we could not detect a standard pattern. For example, some participants rated *obj, -pp* as less acceptable than *obj, +pp*, instead of more acceptable like most other participants. This might reflect an actual difference in their grammars, but the judgment could also be confounded by the prescriptivist rules on p-stranding.

The histograms in Figure 5.2 summarize the individual distribution of the data. The charts on the right show the p-stranding conditions (subjects top, objects bottom) and very clearly indicate a complementarity in the rating. The judgments for the subject condition cluster in the bottom third of the scale while the object condition curve has its highest density in the top third of the scale. The histograms on the left representing the individual distribution of the Pied-piping condition, on the other hand, are much more alike. The top chart show the subject and the bottom chart the object conditions. Both ratings cluster around the middle of the scale.

### 5.2.4 Discussion

A simplistic look at the  $p$ -values in Table 5.2 might lead us to conclude that there is a SUB/OBJ\*EXTRACTION for both pied-piping and p-stranding and that's that. However, we observe a striking asymmetry in that pied-piping decreases the acceptability in the object but increases it in the subject conditions, bringing the two values much closer together. In other words, the subject/object asymmetry almost goes away with pied-piping, a trend which is also reflected in the relatively small  $\eta^2$

Figure 5.2: Pied-piping histograms



values.

We take this to be evidence for the position advocated for by Broeckhuis (2005) for Dutch and also defended for English in 5.2.1 above. According to this view, labelling the pied-piping conditions *+extraction* is a misnomer, as no genuine subextraction has taken place. Instead, the PP was base-generated as some sort of hanging topic or aboutness construction in the C-domain and no filler-gap dependency is established. The cost of associating this PP with the NP is roughly equivalent for subjects and objects. A prediction of this explanation would be that making the hanging topic pragmatically more plausible by adding an appropriate context should improve the acceptability. Informally, this predictions seems to be borne out:

- (14) A documentary about the economy really helped the cause of the Democratic party.

About which topic did a documentary help the Republicans?

An analysis in terms of hanging topics is not available with p-stranding. The preposition is an overt marker of the gap position. Here we observe our familiar subject/object asymmetry. In (13-c) the extraction originated from a unergative subject position. The strong degradation comes as no surprise as both the CED and freezing are violated. Note that this experiment, and all our studies in English in general, do not allow us to tease apart non-complement effects from freezing effects. As subjects in English obligatorily move to SpecTP, the two are conflated. We know that this degradation is a results of the structural position of the extraction domain rather than the internal structure of the NP. The same NPs allow subextraction if they are situated in the complement position of V, as in (13-e).

### 5.2.5 Conclusion

We conclude that genuine extraction only takes place in the p-stranding conditions, while the +pied-piping examples involve some sort of topicalized aboutness PP. We arrive at this conclusion through the observation that subject/object asymmetries largely disappear when pied-piping is involved. Unsurprisingly, our results confirm the classic subject/object asymmetry with genuine subextraction out of NPs. As a results, the alleged counterexamples to the subject condition in English reported in the literature are not cases of genuine extraction and as such do not pose a problem for theories of freezing or the CED.<sup>5</sup>

## 5.3 Experiment 9 - ECM

### 5.3.1 Introduction

We saw in section 5.1 that the opinions on the permeability of the complements of ECM verbs have been somewhat changeable. The ? in (15) should be read as a diacritic of confusion rather than a qualitative judgment about its acceptability.

(15) ?Which politician does John believe a book about to have caused a scandal.

Why should ECM predicates matter? It is well-known that the thematic subject of the embedded clause is exceptionally assigned accusative case by the matrix verb, hence the term Exceptional Case Marking (ECM). In a sense the NP 'a book about which politician' is Janus-faced between being a subject and an object. It would hence be conceivable that it acts as a complement in terms of its permeability, an intuition pursued by Chomsky (2008), albeit in much more technical terms.

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<sup>5</sup>It must be noted that Levine and Sag's counterexamples. (2-c) was rated around 4.3 as a filler item. Here a reanalysis in terms of hanging topics of some sort seems implausible, given that the preposition is left in-situ. It might be relevant that their examples involve passive and unaccusative predicates, even though we will see in section 5.4 that the predicate type does not matter for NP-subextraction. We have to leave these cases open for future research.

However, the closer we look at the phenomenon the less clear it becomes why ECM-NPs should allow subextraction. There is no doubt that the NP starts out within the thematic realms of the embedded predicate. Case assignment and word order then give us strong evidence that it raises to somewhere in the no man’s land between the matrix V and the embedded T (presumably filled with ‘to’). This is not the place to determine what the exact position is, and thankfully it seems immaterial for our purposes (see Lasnik & Saito 1991 for discussion). If freezing is a real phenomenon - and there is a plethora of evidence that it is - the grammar should not care about what the position of the higher copy is. All that matters is that it *is* a higher copy, i.e. that movement has taken place. There is no reason why the ECM-NP should differ in any way from a regular subject that raises to SpecTP for EPP reasons. In both cases we expect this NP to be an opaque domain due to freezing.<sup>6</sup>

The default and expected situation would be that ECM-NPs disallowed all kinds of subextraction. This would be good news, as our theories of freezing would trivially extend to them. If, however, ECM turns out to create more transparent extraction domains this would require significantly more complicated theories of freezing. It is thus of some importance to find out what the facts really are.

### 5.3.2 Design and Methodology

This experiment has a simple 2x2 design, manipulating the factor ECM and EXTRACTION. This gives us the following conditions:

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<sup>6</sup>Norbert Hornstein (p.c.) points out that a distinction could be made in terms of whether the movement occurred purely for EPP reasons or whether some case feature is checked. This could conceivably have consequences for the permeability of a domain. Such a distinction could certainly be formalized but it is not immediately obvious why it should exist.

- (16) a. *-ECM, -EXT*  
A book about Obama caused a scandal.
- b. *-ECM, +EXT*  
Which politician did a book about cause a scandal?
- c. *+ECM, -EXT*  
John believed a book about Obama to have caused a scandal.
- d. *+ECM, +EXT*  
Which politician did John believe a book about to have caused a scandal?

As usual, we constructed 3 lexicalizations of every condition which were grouped into 4 lists using a Latin square design. We consistently used d-linked wh-phrases and extraction out of inanimate unergative subjects. We added 2 subexperiments as well as fillers of all level of acceptability, which totalled in 82 items per participant. 37 native speakers of English were tested online.

### 5.3.3 Results

Unsurprisingly, our results clearly indicate that both factors have a significant effect on acceptability. There is a cost associated to adding in an ECM predicate which is independent of the extraction. The descriptive results are summarized in Table 5.3 and Figure 5.3.

Table 5.3: Means

	-extraction	+extraction
no ECM	6.77	2.61
ECM	4.48	2.24

Table 5.4: ANOVA

	<b>F</b>	<b>p</b>
ECM	424.851	***
EXTRACTION	1764.356	***
ECM x EXT	148.72	***

Furthermore, the ANOVA in 5.4 indicates that there is also a significant ECM x EXT interaction effect. The negative effect of extraction on the rating is disproportionately lower for the ECM condition. This sort of evidence is often used to



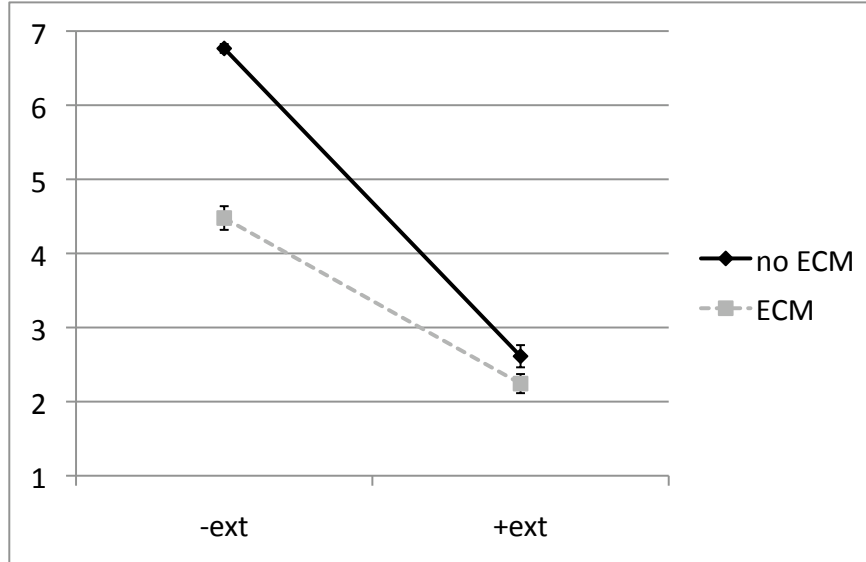


Figure 5.3: Extraction out of ECM-marked subjects

make the case that the lower drop of the acceptability indicates that this domain is more permeable compared to the control condition. We have to be very careful in this case though. Both extraction conditions are rated very low on the scale (2.61 vs. 2.24). A pairwise comparison shows that there is a marginally significant difference:  $t(1,111)=1.87$ ,  $p=.031$ ).

#### 5.3.4 Discussion

Our results do not give us much reasons to believe that ECM marked NPs are transparent domains for subextraction. Even though there is a marginal improvement for extraction out of ECM predicates, it is relatively close to the floor and we should be careful in how to interpret it. The relatively large statistical interaction effect we get is misleading as it is primarily a result of decreased acceptability of the baseline condition caused by the complexity of a sentence such as (16-c). It is unclear whether we want to invoke a grammatical account for this small effect.

This concurs with the majority of intuitions reported in the theoretical literature (Chomsky 1973, Diesing 1990). Chomsky's (2008) examples, which are deemed

acceptable, have the confounding factor that they involve pied-piping. We have shown in section 5.2, however, that there are reasons to believe that pied-piping does not necessarily involve genuine subextraction. We will conclude for now that ECM only marginally affects subextraction out of subjects.

The stimuli we used also differ in other respects. The ECM conditions are longer and the filler-gap distance in the ECM case is bigger than in the non-ECM conditions. A straightforward follow-up study that would not have these issues could compare ECM marked NPs with subjects of finite clauses.

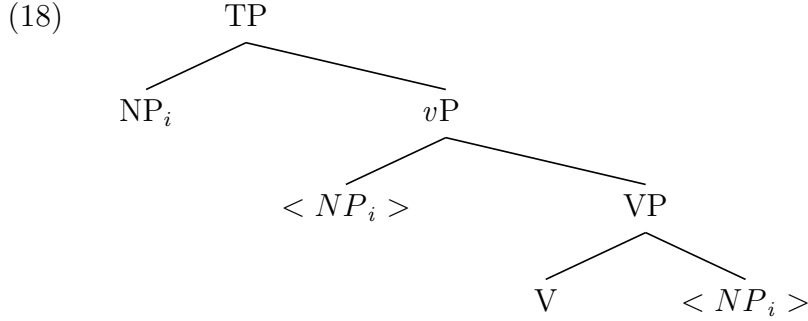
- (17) a. Which politician did John believe a book about to have caused a scandal.
- b. Which politician did John believe that a book about has caused a scandal.

## 5.4 Experiment 10 - Passives

### 5.4.1 Introduction

We know from a German that internal and external subjects show different behavior with regards to subextraction. Recall that we found in a number of studies in chapter 3 that subjects of unaccusatives and passives are more permeable than subjects of unergatives. Should we now expect that English shows a similar asymmetry, as argued for by Chomsky (2008)?

We know that German and English differ in that only the former allows for subjects to stay in-situ. The question is whether the structural position of the lower copy has an affect on the acceptability of subextraction. In other words, in a tree like (18), does the grammar care about whether the NP in SpecTP originated from the Spec of *v*P or the complement position of V?



If we believe in some version of the cycle we expect the raising of the NP to SpecTP to precede the subextraction out of it. The C head above TP then probes down its c-command domain looking to satisfy its wh-feature. Under virtually any definition of minimality the NP in SpecTP is the closest and as such the one that is attracted. If we follow these assumption the structural position of the lower copy should be immaterial.

However, the position of the lower copy becomes relevant under an MSO approach. Recall from section 2.1.2.1 that CED effects are a result of the specifier (or adjunct) being forced to spell out early for linearization purposes. Consequently, the specifier is turned from a hierarchical set to a string and its subcomponents are no longer accessible for further syntactic movement.

For elements that are first-merged as specifiers this reasoning derives island effects without further assumptions. Things get a little trickier with first-merged complements that are raised to a Spec position, such as passive subjects in English. Consider the following example, taken from Nunes & Uriagereka (henceforth NU, 2000, 26, ex. 17a ):

(19) \*who<sub>i</sub> was [ a picture of t<sub>i</sub> ]<sub>k</sub> taken t<sub>k</sub> by Bill

What would the prediction of MSO be? The DP 'a picture of who' is assembled and merged with V. T is merged and requires a DP to move to its Spec to have its EPP feature checked. 'A picture of who' is copied, spelled-out and remerged in SpecTP.

The following object is formed (the angled brackets indicate a spelled-out copy).

- (20)  $[_{TP} [_{DP} <a, \text{picture, of, who}> ] [_{T} \text{were} [_{VP} \text{taken} [a \text{ pictures of who} ] \text{by Bill} ]]]$   
 [NU's ex. (21), slightly modified]

In the next step C is merged and probes down the spine to have its wh-feature checked. The substructure of the higher copy in SpecTP,  $<a, \text{picture, of, who}>$ , is not accessible. But what about the lower copy in the complement position of V? Nothing up to this point prevents C from probing the lower 'who', copying and remerging in SpecCP, deriving (19).

NU are very much aware of this state of affairs and add the assumption that uniform chains can only be formed between copies of the same type, i.e. a spelled-out and a non spelled-out copy cannot form a legitimate chain. This forces the lower copy to be spelled-out as well, when the higher copy is merged in SpecTP.

NU quite explicitly introduce this extra assumption to rule out examples like (19). We will not question the naturalness of this account (see Sheehan 2009 for discussion) but we will ask the more general question of whether it is empirically desirable to fully rule out such examples. If the structural position of the lower copy really plays a role, as contended by Chomsky (2008), the MSO system might make a correct prediction without NU's extra assumption, i.e. freezing effect are ameliorated if the lower copy is a complement.

To this end, we compare the acceptability of extraction out of unergative and passive subjects experimentally.

#### 5.4.2 Design and Methodology

Just like the previous ECM-experiment this study has a simple 2x2 design, manipulating the factors UNERGATIVE/PASSIVE and EXTRACTION. This gives us the

following conditions:

- (21) a. *Unergative, +ext*  
 John wondered which man a book about caused a scandal last year.  
 b. *Unergative, -ext*  
 John wondered whether a book about Obama caused a scandal last year.  
 c. *Passive, +ext*  
 John wondered which man a book about was released last year.  
 d. *Passive, -ext*  
 John wondered whether a book about Obama was released last year.

As usual, we constructed 3 lexicalizations of every condition which were grouped into 4 lists using a Latin square design. We consistently used d-linked wh-phrases and extraction out of inanimate NPs. We added 2 subexperiments as well as fillers of all level of acceptability, which totalled 82 items per participant. 37 native speakers of English were tested online.

### 5.4.3 Results

The sample means in Table 5.5 and the graph in Figure 5.4 suggest that the predicate type does not seem to have any large effect on acceptability. As a matter of fact, the lines are close to being identical.

Table 5.5: Means

	-ext	+ext
Unerg	6.27	2.55
Pass	6.21	2.68

Table 5.6: ANOVA

	<b>F</b>	<b>p</b>	$\eta^2$
ARG	1.491	.225	.013
EXTRACTION	929.444	***	.894
ARG x EXT	15.056	***	.12

The ANOVA results in Table 5.6 confirm that there is a highly significant EXTRACTION but no ARG main effect. There is, however, a small interaction effect between the two factors. This interaction has to be taken with a grain of salt though. Even

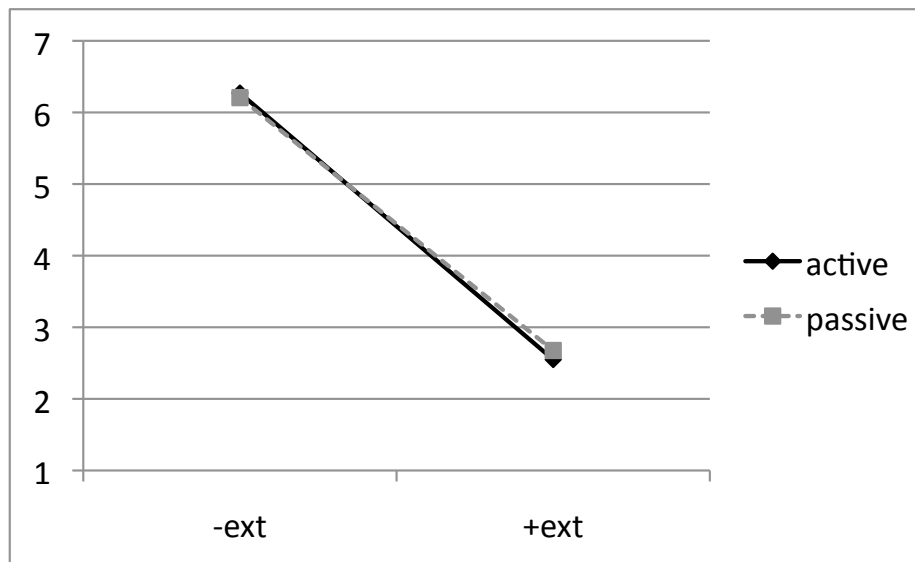


Figure 5.4: Extraction out of passivized subjects

though the  $p$ -value indicates significance, the effect size expressed by the partial  $\eta^2$  statistic is very small. In addition, the pairwise comparison for the extraction conditions (21-a) and (21-c) does not reach significance ( $t < 1$ ). A simple one-way ANOVA comparing the means of the two extraction conditions also did not come close to significance  $F(1,110) = .3694$ ,  $p = .544$ ). In short, even though we find a small interaction effect we should be very careful about the conclusions we draw.

#### 5.4.4 Discussion

It seems fair to conclude that our experiment has confirmed the null-hypothesis that the predicate type does not affect acceptability of subextractions out of subjects in English. We argued above that this is expected if only the higher copy in SpecTP is considered. The structural position of the lower copy is immaterial.

These results stand in contrast to findings cited by Kratchenko, Xiang & Polinsky (2009, henceforth KXP), who report an unergative/unaccusative asymmetry for extraction out of subjects in English both in offline acceptability and self-paced reading tasks.

KXP’s and the study presented here differ in a few points. The most important difference is that, while both experiment look at internal vs. external arguments, we were using passives and KXP unaccusative predicates. It would be interesting to look at a four way comparison between unergatives, unaccusatives, passives and objects, as in the German study discussed in section 3.4.<sup>7</sup> We leave this for future research.

Both our results and KXP’s show acceptability rating at the very low end of the scale for both internal and external arguments, in striking contrast to the results we got for German where internal subject were on par with objects. Even though the contrast KXP find between unaccusative and unergatives is intriguing and in need of an explanation, although not necessarily a grammatical one, it is overshadowed by the contrast with objects. I take both our study and KXP as indicative of the existence of freezing effects in English, with the structural position of the lower copy being of only secondary importance.

## 5.5 Experiment 11 - Subject islands and reconstruction

### 5.5.1 Introduction

Sauerland & Elbourne (2002, henceforth SE) add an intriguing piece of data to the discussion on subject islands. In essence, their account of scope reconstruction predicts that the raising of internal arguments to SpecTP in passive clauses can be delayed until PF if this postponement has a scopal effect. More technically, SE restate Fox’s (1995) condition on total reconstruction in the following way:

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<sup>7</sup>There are some other small differences that are unlikely to have a major effect on the results. KXP used non-d-linked while we were using d-linked wh-elements. This difference is likely to influence the EXTRACTION main effect but unlikely to alter the relative contrast between the condition (cf. Sprouse 2007). We used a 7-point and KXP a 5-point scale. With a relatively high *n* (both studies had 37 people), this is also extremely unlikely to have any interesting effect on the results (see our discussion in section 2.2.4.1).

- (22) Overt movement of XP can be delayed until PF only if there is a scope-taking element Y such that XP takes scope above Y if movement takes place in the stem but below Y if movement is delayed until PF, and if these two scopal construals are semantically distinct.  
(SE, p. 303, ex. 54)

SE report personal communication with J. Nissenbaum, who claims that extraction out of passive or unaccusative subjects is possible if the movement from the internal argument position to SpecTP can be delayed according to (22). SE contend that this is in fact borne out (SE, p. 304, ex. 56):

- (23) a. \*That's the book  $Op_j$  that [a chapter of  $t_j$ ]<sub>i</sub> seems  $t'_i$  to have been assigned to John  $t_i$  .  
b. ?That's the book  $Op_j$  that [a chapter of  $t_j$ ]<sub>i</sub> seems  $t'_i$  to have been assigned to every student  $t_i$  .

In (23-a) the raising of 'a chapter of OP' has no reason to be delayed as 'John' is not a scopal element. Hence, the movement happens cyclically in narrow syntax and subextraction is ruled out as a result of freezing. In (23-b), on the other hand, 'a chapter of OP' reconstructs within the scopal domain of 'every student', i.e., interpreting it in its in-situ position leads to semantically distinct construal according to (22). Consequently, the movement can be delayed to PF and follows the subextraction. The OP is subextracted out of a complement and the sentence is grammatical.

This is arguably one of the most intriguing contrasts observed in the domain of subject islands and a beautiful piece of evidence in favor of SE's PF-movement analysis. In fact it is such a good argument that we might start getting worried. After all, *if it seems too good to be true it probably is*, as the proverb goes. The logic of the SE's theoretical argument seems sound but the question remains if the contrast in (23) in fact holds as stated.



If linguists who are also native speakers of English are confronted with (23) interesting things start happening. If we omit SE’s judgments and ask whether they find a contrast between (a) and (b), none of my informants gets any difference. Both are equally degraded, ?\* is the consensual diacritic used. If we, however, first explain SE’s theory and how it makes this prediction and then ask whether they agree with the judgment given in (23), for many the contrast all of a sudden starts to be real. It seems like this is the kind of contrast linguists would really like to hold. We certainly do not intend to rain on SE’s parade but it seems quite crucial to establish that this contrast holds up in a controlled acceptability judgment study before it can be used as evidence for a particular theoretical position.

### 5.5.2 Design and Methodology

The study has a 2x2 design, manipulating the factors QUANTIFIER and EXTRACTION. We also added a control condition where the NP that is subextracted out of is located in an object position. This condition was added to make sure that the NPs allow subextraction at all. This gives us the following five conditions:<sup>8</sup>

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<sup>8</sup>Special thanks goes to Brad Larson for proof-reading the stimuli

- (24) a. *-Quantifier, -Extraction*  
 A different chapter of the textbook seems to have been assigned to John.
- b. *+Quantifier, -Extraction*  
 A different chapter of the textbook seems to have been assigned to every student.
- c. *-Quantifier, +Extraction*  
 That's the book that a different chapter of seems to have been assigned to John.
- d. *+Quantifier, +Extraction*  
 That's the book that a different chapter of seems to have been assigned to every student.
- e. *Control*  
 That's the book that John seems to have assigned a different chapter of to every student.

As usual, we constructed 3 lexicalizations of every condition which were grouped into 4 lists using a Latin square design. We followed SE in using presentational relative clauses for all extraction condition. The adjective 'different' was added to every condition to strongly favor a narrow scope reading in (24-b), (24-d) and (24-e), i.e. the relevant reading that involves reconstruction to the in-situ position.<sup>9</sup>

One unrelated subexperiment as well as fillers of all level of acceptability were added, which totalled 64 items per participant. 31 undergraduates of the University of Maryland (all self-reported native speakers of English) took the experiment online for class credit (*Introduction to Linguistics*, no participant had any other prior training in linguistics).<sup>10</sup>

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<sup>9</sup>Needless to say, the wide scope reading is still available but strongly dispreferred. We will return to this issue below.

<sup>10</sup>Valentine Hacquard (p.c.) suggests a follow-up experiment contrasting two quantifiers with the same quantificational force:

- I        i        That's the book that a different chapter of seems to have been assigned to some student.
- ii        That's the book that every chapter of seems to have been assigned to every student.

In (24-i) and (24-ii), there would be no delay until PF to raise since there would not be any scope difference, i.e. the inverse scope would be logically equivalent. It would be very interesting to see

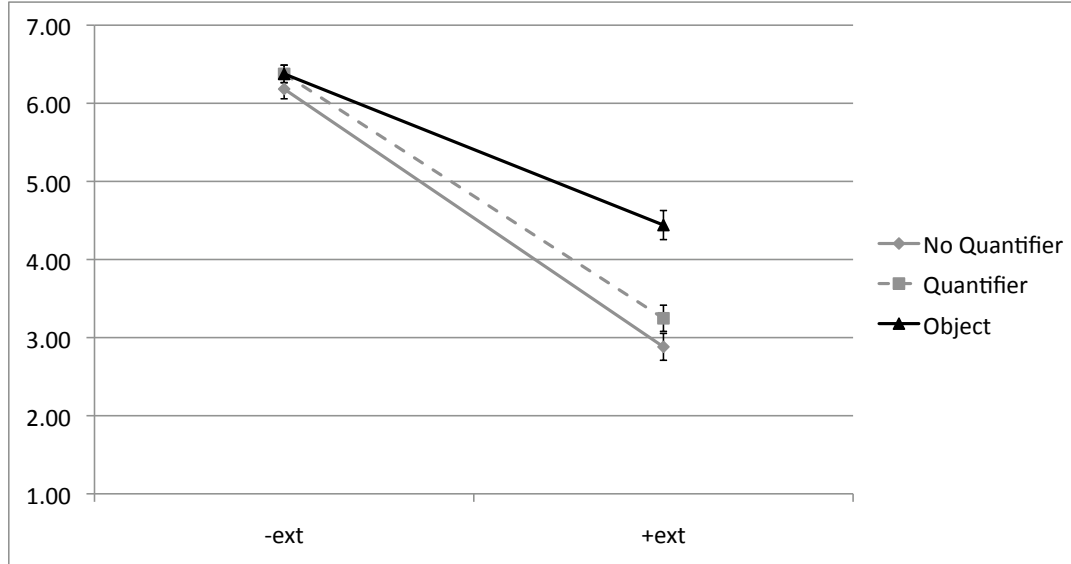


Figure 5.5: Results

### 5.5.3 Results

The descriptive results are given in Figure 5.5 and Table 5.7. The solid grey line represents the conditions without a quantifier, (24-a) and (24-c), the dashed grey line the conditions with a quantifier, (24-b) and (24-d). The solid black line is the object control condition.<sup>11</sup>

The 2x2 ANOVA subanalyses results are summarized in Table 5.8. While we do find a huge effect for the factor EXTRACTION and a large effect for the factor QUANTIFIER, we find a significant yet small interaction between the two factors (the effect size is indicated by the  $\eta^2$  value). A pairwise comparison between the two subject subextraction conditions (24-c) and (24-d) is marginally significant ( $t(1, 92)=1.53$ ,  $p=.063$ ).

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if and how this would affect the extraction out of the subject.

<sup>11</sup>Note that, technically, this should not be a line since we did not measure the object baseline condition as this was not what we were primarily interested in. The object subextraction condition was only added as a control to make sure that the NPs we were using generally allow subextraction. We will not draw any conclusions as to the difference between subjects and objects in this study. It is only to facilitate the optical comparison with the two subject lines that we assumed an equivalent baseline value for the object as for the +quantifier, -extraction condition. Strictly speaking, this is not fully kosher but we will hope for the reader's clemency.

Table 5.7: Means

	-ext	+ext
no quantifier	6.18	2.88
quantifier	6.37	3.25
object	N/A	4.44

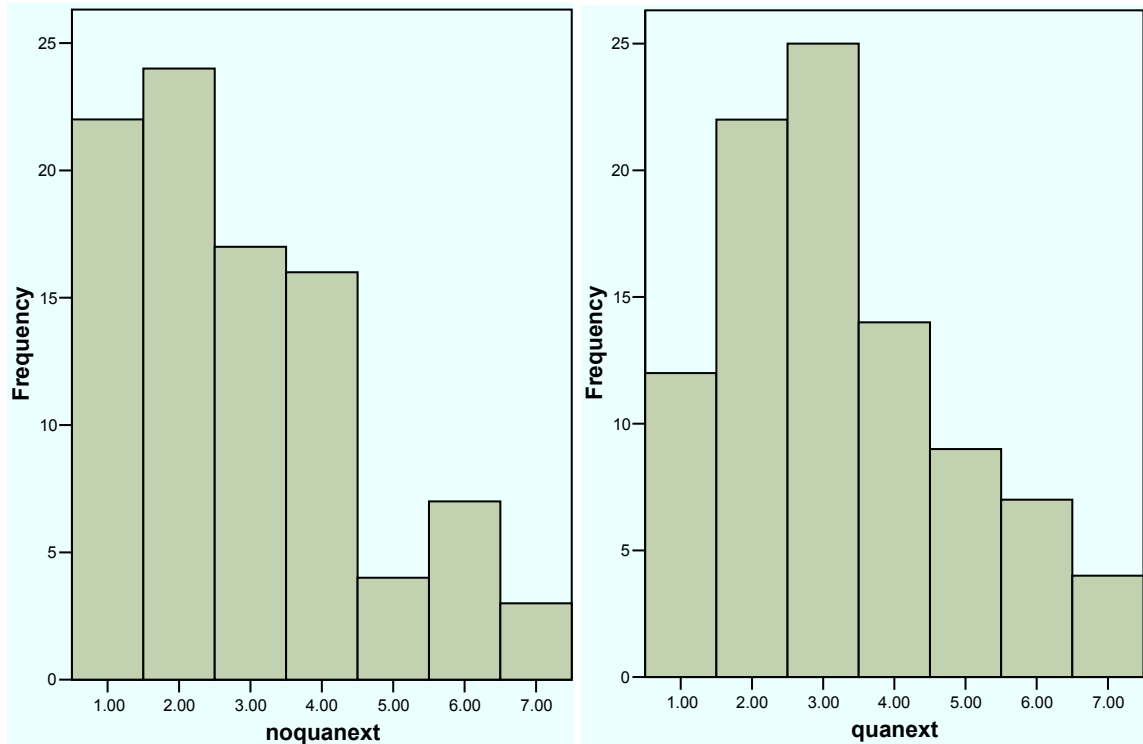
Table 5.8: ANOVA

	<b>F</b>	<b>p</b>	$\eta^2$
QUAN	59.542	.225	.393
EXT	695.287	***	.883
QUAN X EXT	8.105	***	.081

### 5.5.3.1 Distribution of the data

19 out of 31 participants (about 61%) confirm SE's contrast between (24-c) and (24-d). However, only 7 speakers (about 22%) rate this contrast with 1 point or more on the scale. The complete distribution is given in the histograms in Figure 5.6.

Figure 5.6: Histograms



We see the different means reflected in the slight tendency to the left between the *-quantifier* condition compared to the *+quantifier* condition. However, there are no reasons to believe that we are conflating different grammars. The data is

relatively uniform and shows the noise we used to seeing with acceptability judgment tasks.

#### 5.5.4 Discussion

Do our results answer the question whether SE’s contrast holds empirically? Yes and no. At a first glance, the graph in Figure 5.5 presents us with two almost perfectly parallel lines for the subject subextraction conditions. Speakers generally prefer the presence of a quantifier in the object position. This is not surprising, given that the adjective ‘different’ biases towards an inverse scope reading. The preferred meaning in (24-b) is one where the universal quantifier scopes over the existential, i.e. the distributed reading where chapter 1 is assigned to Mary, chapter 2 is assigned to Grace, chapter 3 to Phil, etc. Pragmatically, this reading seems plausible, as we can easily think of a seminar scenario where every student gives a presentation on a different chapter of the textbook and we do not expect to listen to 20 presentations on the same chapter.

Once the quantifier is replaced with a proper name, as in (24-a), we only have one reading, namely the one where John was assigned a chapter of the textbook that is different in some contextually salient way. No information is given what this chapter is *different from* and the speakers have to construct a plausible context themselves. This is certainly doable, e.g. John was originally assigned to present chapter 3 but the teacher decided to skip this chapter and assigned John chapter 4 instead. However, this extra pragmatic assumption seems to be enough to bias against this condition. This is reflected in the different rating in the baseline condition: 6.37 with the quantifier, 6.18 without it.

We find the same difference for the extraction conditions, (24-c) vs. (24-d). However, the lines are not completely parallel. It seems to be the case that, even when we control for the QUANTIFIER main effect, extraction disproportionately de-

grades the *-quantifier* condition more than the *+quantifier* condition. This is exactly the contrast reported by SE. The effect, however, is very small ( $\eta^2=.081$ , following convention effects  $< .09$  are considered small effects). In addition, if we compare the difference between the means of the two subject subextraction conditions, on the one hand, to the difference between the *+quantifier* condition and the object subextraction control condition, on the other hand, we see a striking discrepancy in size: .37 vs. 1.19.

A reasonable question to ask is: is the difference caused by the presence of the quantifier aggravated at a lower end of the scale? Speakers disprefer having a proper name to having a quantifier for the pragmatic reasons explicated above. Once extraction pushes down both conditions to the lower end of the scale the perceived contrast aggrandizes. Does that super-additive effect mean that the presence of the quantifier genuinely helps the subject subextraction in the sense of SE?

Consider this analogy: someone is asked to compare the taste between Coke and Pepsi. First, both drinks are served ice cold and the participant has a slight preference for Coke over Pepsi. Now, both sodas are served warm. The overall rating drops dramatically, as expected, because sodas are supposed to be consumed chilled. In addition, the perceived inferiority of Pepsi is larger than in the cold condition. Does that mean that the factors TEMPERATURE and SODA TYPE interact? Is there something about Coke that tolerates lukewarm temperatures better than Pepsi? Or is it just the case that a perceived contrast becomes more noticeable at the lower end of the scale? Intuitively, I am leaning towards the latter interpretation, both in the Pepsi challenge and in the interpretation of our results above.

The difference between a true interaction effect and the magnification of an effect at the lower end of the scale is subtle, and we will not be able to tease apart the two here. It seems fair to conclude, however, that our data is nowhere near being knock-down evidence for a grammatical contrast in the sense of SE. In their

discussion, they fail to give the full paradigm including object subextraction. Their theory would predict that if subject raising can be delayed until PF, subjects should essentially behave like objects for the purposes of subextraction. This is clearly not the case. Whether there is a difference between the two subject conditions, related to the presence of a quantifier, can neither be fully confirmed nor disproved by this study.

### 5.5.5 Conclusion

This experiment was aimed at testing the correctness of SE's claims that the presence of a scopal element affects the acceptability of subject subextraction. Our experiment does not give a definite answer but we saw reasons to doubt that SE's contrasts holds as presented in their paper. Given the small effect size, the baseline difference and the contrast with the object control condition, the conservative interpretation of the results disfavors interpreting this contrast as indicative of an architectural difference in the sense envisaged by SE.

## Chapter 6

### A glance at other languages: Subextraction in Japanese and Serbian

#### 6.1 Japanese

##### 6.1.1 Introduction

Japanese is often reported to allow extraction out of subjects (cf. Ross 1967, Ishii 1997, Takahashi 1994, Kikuchi 1987 among others). Stepanov, citing Kikuchi, gives the following contrast for comparative deletion:

- (1) a. OP [Mary-ga *t* yonda no]-ga akirakana yorimo John-wa  
Mary-nom read that-nom is-obvious than John-top  
takusan-no hon-o yonda.  
many-gen book-acc read  
'(\*)John read more books than [that Mary read *t*] is obvious.'
- b. \*OP Bill-ga [Mary-ga *t* yonda kara] odoroiita yorimo]  
Bill-nom Mary-nom read because was-surprised than  
John-wa takusan-no hon-o yonda.  
John-top many-gen book-acc read  
'(\*)John read more books than Bill was surprised because Mary read *t*.'

In (1-a) the operator originates inside a subject and the construction is reported to be well formed. In (1-b), on the other hand, the operator-gap dependency is formed across an adjunct, which is deemed unacceptable. Stepanov takes the existence of adjunct island effects as indicative of the formation of a genuine filler-gap dependency. He argues against an analysis in terms of a silent *pro*, as otherwise there



would be no reason for (1-b) to be ill-formed. He then concludes that Japanese allows extraction out of subjects.

There are at least two problems with Stepanov's examples. First, the examples in (1) and virtually all other cases cited in the literature involve highly subtle judgments, and some speakers disagree with what is reported. While all speakers happily concur with the unacceptability of the adjunct case, speakers have very mixed opinions about the subject case. Some even have problems understanding what (1-a) is supposed to mean. In short, while there is undoubtedly a contrast between extraction out of subjects and adjuncts, classifying this asymmetry in terms of \* vs. OK seems too premature a conclusion.

Second, Stepanov looks at the wrong contrast to begin with. It is no surprise that extraction out of adjuncts is degraded compared to extraction out of subjects. The strength of islands effects is known to vary between different types of islands. This does not imply that weaker island effects do not exist. The contrast between subject and adjuncts holds for English as well, as the following contrast suggests. The fact that (2-a) is slightly less degraded than (2-b) certainly does not imply that the former is grammatical and the latter ungrammatical. What is relevant in English is that subject subextraction is degraded compared to object subextraction.

- (2)    a. ?\*Which politician did a book about cause a problem because it insulted  
              John?  
          b. \*Which politician did John cause a problem because he wrote a book  
              about?

We conclude that Stepanov's data is inconclusive. Another case is considered by Lasnik&Saito (1992) (henceforth, LS), who to my knowledge are the only ones who directly contrast extraction out of subjects with extraction out of objects.

- (3) a. ??dono hon-o Mary-ga [John-ga *t* katta koto]-o mondai-ni  
 which book-acc Mary-nom John-nom bought fact-acc problem-to  
 siteru no  
 making  
 'Which book is it that Mary is calling the fact that John bought into  
 question'
- b. ??dono hon-o Mary-ga [John-ga *t* katta koto]-ga mondai-da  
 which book-acc Mary-nom John-nom bought fact-nom problem-cop  
 to omotteru no  
 COMP think  
 'Which book is it that Mary thinks the fact that John bought it is a  
 problem'

LS assign a ??-status to these cases because both examples involve complex NP-island violations, as the *wh*-element is scrambled across a clause headed by the noun *koto* ('the fact that') and hence have a nominal status. Whatever degradation this incurs, so their argument goes, it remains constant for subjects and objects. In other words, there is no further cost for extraction out of subjects, and hence subjects are not islands in Japanese.

LS's data reveals a quite general complication with the investigation of subextraction in Japanese. The only way to construct a scenario where subextraction can be tested involves complex NPs, headed either by *koto* or *no*.<sup>1</sup> Japanese does not allow for bare finite or infinite sentential subjects. PP-subextraction out of NPs, split-constructions or quantifier floating are unavailable as well.

However, there are two other confounding factors that could have been controlled for. First, the examples in (3) differ in that the object clause involves one more level of embedding compared to the subject. In (3-b) the matrix clause 'Mary thinks' is added, which is absent in (3-a). LS are forced to do so to exclude a parsing

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<sup>1</sup>*No*, which is used in (1), also has a nominal status. It is often referred to as a 'nominalizing complementizer' although it is translated as 'that' in this example. It is unclear why this example is not as degraded as the two examples in (3), but it does not seem to be the case that *no* does not induce the CNPC effects because replacing *koto* with *no* does not seem to make the sentence any better than ??, i.e. both induce CNPC islands.

of the string in (3-a) where the movement of 'which book' is construed as clause-internal scrambling, which would not involve subextraction. This is illustrated by (4):

- (4) dono hon-o [mary-ga t kat-ta koto]-ga mondai na no?  
 which book-acc mary-nom bought fact-nom problem be Q  
 "which book is [that mary bought t] a problem?"

This string could also be interpreted as scrambling within the koto-clause, as in (5). In that case, there would be no scrambling 'out of' a subject.

- (5) [which book [mary-nom bought t fact]]-nom problem be?

Adding the extra clause blocks this interpretation and guarantees that the wh-phrase has undergone long-distance scrambling. The same is not necessary in (3-b), as the fact that 'which book' is to the left of 'Mary' unambiguously indicates that long-distance scrambling has taken place.

Second, LS do not consider the status of the baseline conditions, i.e. whether there is a contrast between sentential subjects vs. sentential objects without scrambling. This is particularly relevant in the case at hand, as the object but not the subject example involves one level of center-embedding, which is notorious in incurring a higher processing cost and consequently a lower acceptability.

To sum up, a quick survey of the theoretical literature on subject islands in Japanese leaves a number of questions. The fact that extraction out of subjects is less degraded than extraction out of adjuncts does not imply that subject islands do not exist in Japanese. A direct comparison between subject and object subextraction at first glance suggests that there is no contrast. However, a number of potentially confounding factors have not been controlled for. In addition, many of the pertinent judgments are very subtle, and prone to a considerable amount of inter-speaker

variation. In short, the empirical evidence on the absence of the subject condition in Japanese is murky, a fact which calls for a more careful look at the data.

## 6.1.2 Experiment 12 - Scrambling and Clefting

### 6.1.2.1 Design and Methodology

We took LS's cases as the point of departure but modified and supplemented them in a number of ways. The study had a 3x2 design, manipulating the factors SUB/OBJ and SCRAMBLING and CLEFTING. This yields the following 6 conditions:

(6) a. *Subject, -scrambling*

sono syouzyo-wa iziwaruna ane-ga kuma-no-nuigurumi-o suteta  
the girl-Top mean sister-Nom teddy.bear-Acc dumped  
koto-ga kenka-no-genin da to uttaeta  
fact-Nom fight-gen-cause Cop Comp claimed

'The girl claimed that the fact that the mean sister dumped her teddy bear is the cause of the fight.'

b. *Subject, +scrambling*

kuma-no-nuigurumi-o sono syouzyo-wa iziwaruna ane-ga suteta  
teddy.bear-Acc the girl-Top mean sister-Nom dumped  
koto-ga kenka-no-genin da to uttaeta  
fact-Nom fight-gen-cause Cop Comp claimed

**Her teddy bear<sub>1</sub>**, the girl claimed [that [the fact that the mean sister dumped **t<sub>i</sub>**] is the cause of the fight].

c. *Object, -scrambling*

sono syouzyo-wa iziwaruna ane-ga kuma-no-nuigurumi-o suteta  
the girl-Top mean sister-Nom teddy.bear-Acc dumped  
koto-o naisyo-ni-siteita to uttaeta  
fact-Acc secret-Dat-kept Comp claimed

'The girl claimed that her sister kept as a secret the fact that she dumped her teddy bear.'

d. *Object, +scrambling*

kuma-no-nuigurumi-o sono syouzyo-wa iziwaruna ane-ga suteta  
teddy.bear-Acc the girl-Top mean sister-Nom dumped  
koto-o naisyo-ni-siteita to uttaeta  
fact-Acc secret-Dat-kept Comp claimed

**Her teddy bear**<sub>1</sub>, the girl claimed [that her sister kept as a secret [the fact that she dumped **t**<sub>1</sub>]]

- e. *Clefting from within a subject clause*

Sono syouzyo-ga iziwaruna ane-ga e<sub>1</sub> suteta koto-ga kenka-no  
 The girl-Nom mean sister-Nom dumped fact-Nom fight-Gen  
 genin da to uttaeta no-wa kuma-no-nuigurumi<sub>1</sub> da  
 cause Cop Comp claimed NL-Top teddy-bear Cop

'It is **her teddy bear**<sub>1</sub> that the girl claimed that the fact that her mean sister dumped **e**<sub>1</sub> is the cause of the fight.'

- f. *Clefting from within an object clause*

Sono syouzyo-ga iziwaruna ane-ga<sub>2</sub> PRO<sub>2</sub> e<sub>1</sub> suteta koto-o  
 The girl-Nom mean sister-Nom dumped fact-Acc  
 naisyo-ni-siteita to uttaeta no-wa kuma-no-nuigurumi<sub>1</sub> da.  
 secret-Dat-kept Comp claimed NL-Top teddy-bear Cop

'It is **her teddy bear**<sub>1</sub> that the girl claimed that her sister kept as a secret the fact that she dumped **e**<sub>1</sub>.'

We had 18 sets of items (3 tokens per condition for each subject) which were grouped into 6 Latin-square lists. A sub-experiment with same structure (18 sentence sets) as well as 24 filler items were added. Every participant saw a total of 60 items. 27 native speakers of Japanese (by self assessment) without any prior training in linguistics participated in the study. The study was conducted online using Alex Drummond's spellout software.

The number of clauses was controlled for. We followed LS in adding a third clause to the subject condition example to guarantee that long-distance scrambling took place, but we counterbalanced this by adding a third clause in the object condition as well. This, however, resulted in a sequence of three subjects in the object conditions in (6-c) and (6-d). Since three subjects in a row come close to being unparseable, we replaced the lowest subject with a PRO, which is controlled by the second lowest subject (see Fujii 2006, among others, for control phenomena across a finite clause in Japanese). This eases the parsability of the string in the object condition and thus helps to keep the number of clauses constant. On the other

hand, this creates a garden path, as the parser only knows that there is a PRO when it reaches the end of the clause. This constitutes an asymmetry compared to the subject conditions in (6-a) and (6-b), which is likely to reflect in the acceptability rating. We will return to this issue in the discussion section below.<sup>2</sup> Finally, the baseline conditions without scrambling were added in (6-a) and (6-c).

### 6.1.2.2 Results

The results confirmed LS’s intuitions that there is no significant difference between scrambling out of subjects vs. objects, and no difference between operator movement from subjects vs. objects in clefts. We do find, however, a significant difference between the baseline conditions, with subjects being preferred over objects. Crucially, there is also a significant interaction effect between the factors SUB/OBJ and EXTRACTION. The results are summarized in Figure 6.1 and Tables 6.1 and 6.2.

Pair-wise comparisons confirmed LS’s intuitions that there is no significant difference between scrambling out of subjects (2.73) vs. objects (2.85), and no difference between operator movement from subjects (2.57) vs. objects (2.96) in clefts ( $t < .1$ ). We do find, however, a significant difference between the baseline conditions, with subjects (6.93) being preferred over objects (5.79) ( $t(1,80)=2.9$ ,  $p=.002$ ).

Table 6.1: Japanese: means

	Mean	SD
sub, -ext	6.39	.96
sub, +scr	2.73	1.51
sub, +cleft	2.57	1.24
obj, -ext	5.79	1.63
obj, +scr	2.85	1.59
obj, +cleft	2.96	1.33

Table 6.2: ANOVA Japanese

	F	<i>p</i>
SUB/OBJ	24.945	***
EXTRACTION	733.581	***
SUB/OBJ*EXTRACTION	61.366	***

<sup>2</sup>Another minor difference between our examples and LS’s is that we changed long-distance wh-scrambling to long-distance non-wh scrambling.

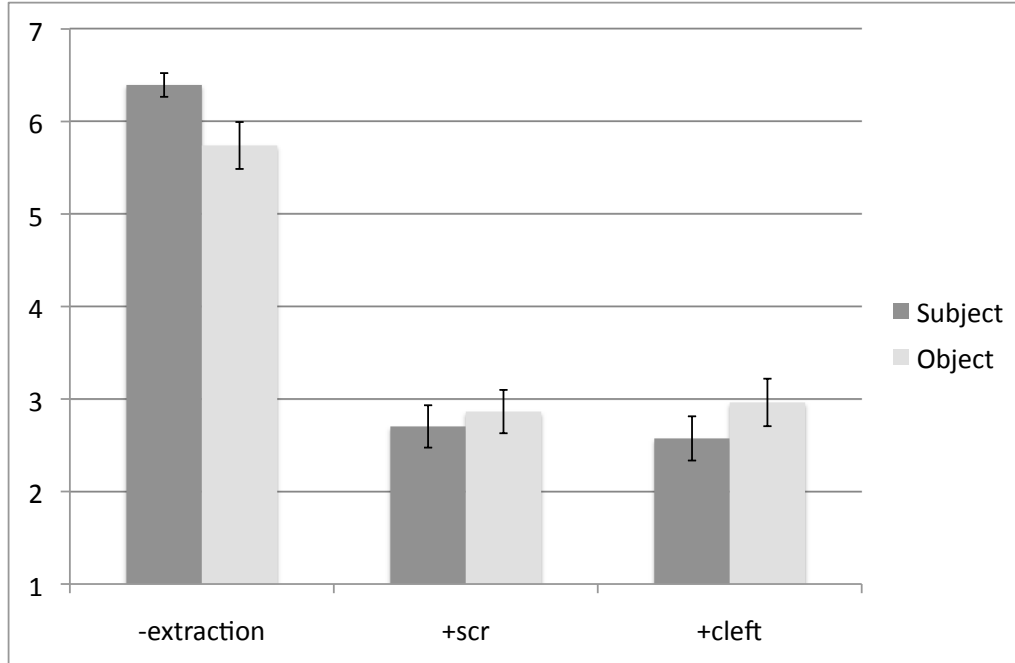


Figure 6.1: Extraction out of non-finite clauses in Japanese

### 6.1.2.3 Discussion

The lack of a significant difference between scrambling out of subjects vs. objects might tempt us to follow LS in concluding that the subject condition does not hold in Japanese. However, once we take the baseline conditions into consideration a different picture emerges. The object baseline condition, (6-c), is significantly degraded compared to the subject condition, (6-a). Extraction disproportionately affects subjects worse than objects - the SUB/OBJ\*EXTRACTION interaction effect in Table 6.2. While long-distance scrambling leads to strong degradation in both case due to the unavoidable CNPC effect induced by *koto*, subjects are more strongly affected than objects. We take this to be highly suggestive of the existence of the Subject Condition in Japanese.

What are the origins of the asymmetry between the baseline conditions? We have already hinted above at the potential source. Even though the number of clauses in both conditions is the same, the object condition sentences are significantly

more complex than the subject condition. Only the object condition involves center-embedding. This is obviously a disadvantage for the object condition. The object condition also involves three nominal subjects ('girl', 'sister', and PRO controlled by 'sister'). The subject condition involves two nominal subjects: 'girl' and 'sister'. The calculation of the controller of PRO may be an extra burden in the object condition. The parser only realizes that the sentence contains a PRO once it reaches 'kept' at the very end of the sentence. The alternative to the PRO would have been 3 overt subjects in a row. However, we will see from filler-data below that center-embedding with 3 overt subjects even when no extraction takes place leads to worse acceptability than either of our scrambling conditions. This suggests that replacing one subject with a PRO helped the object condition to a certain extent but still did not boost it all the way to the status of the subject condition.

Given that the ratings for both scrambling conditions are relatively low on the scale, it is a valid concern that we have produced floor effects and that potential differences have been washed out. Looking at our filler data, however, we can be fairly confident that our conditions are not at the floor of the scale. Table 6.2 gives the rating of some representative filler items in (7) and compares them with the two scrambling conditions.

(7) a. *Long-distance scrambling*

Igirisei-no koutya-o<sub>1</sub> masutaa-wa sono tyuunen-no  
 British tea-Acc cafe-owner-Top the middle-aged-Gen  
 sinsi-ga t<sub>1</sub> maikai oodaasuru to hanasi-tei-ta.  
 gentlemen-Nom every-time order Comp talk-prog-past  
 'British tea<sub>1</sub>, the coffee shop owner was talking that the middle aged  
 gentlemen orders t<sub>1</sub> every time.'

b. *Center-embedding*

Obasan-ga syouzikina [bebiisittaa-ga [ani-ga  
 Aunt-Nom honest baby-sitter-Nom older-brother-Nom  
 imouto-o izimeta to] itta to] omot-tei-ru.  
 younger-sister-Acc bullied Comp said Comp think-prog-pres



'The aunt thinks [that the honest babysitter said [that the older brother bullied his younger sister]].'

c. *Why in-situ inside RC*

Hudan-wa mazimena sono gakusei-wa [amerikazin-no eigo-no  
Usual-Top diligent the student-Top [American-Gen English-Gen  
sensei-ga naze dasita syukudai]-o yari-tagara-nakat-ta no?  
teacher-Nom why assigned homework]-Acc do-want-not-past Q

'The usually-diligent student didn't want to do [the homework that the American English teacher assigned why]?'

d. *CSC violation*

Amaku-te oisii ringo-to<sub>1</sub> kuisinbouno syougakusei-ga t<sub>1</sub>  
Sweet-and delicious apple-and gluttonous grade-schooler-Nom  
suppai mikan-o douzi-ni kuti-ni ireta.  
sour orange-Acc at-the-same-time mouth-to put

'A sweet and delicious apple<sub>1</sub>, the gluttonous grade schooler put [t<sub>1</sub> and a sour orange] into his mouth at the same time.'

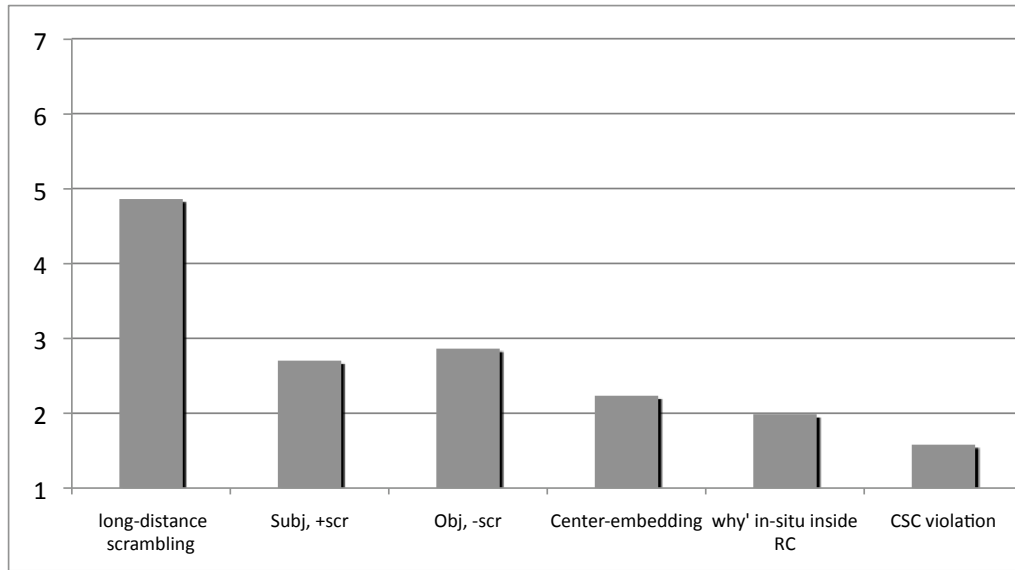


Figure 6.2: Scrambling conditions compared with filler items

We see that grammatical long-distance scrambling already results in slightly decreased acceptability. Crucially, center-embedding with three overt subjects, wh-adjuncts inside a relative clause and CSC-violations are all worse than our target

conditions. This strongly suggest that our conditions are still located within the meaningful range of the scale.

### 6.1.3 Conclusion

Our study allows us to conclude that subject island effects exist in Japanese, contrary to the majority view in the theoretical literature. However, it is only fair to point out that our results are not as conclusive as we would like them to be. LS's intuition that extraction out of subject and objects is equally degraded still holds. Our evidence is more indirect and purely stems from the interaction effect, which is solely due to the asymmetry in the baseline conditions. We discussed a number of confounding factors in Japanese that make it hard to construct perfect stimuli. Nonetheless, it seems fair to conclude that we have shown that the conclusion that the CED does not hold is too simple. Further studies will have to be conducted to make stronger claims about the empirical facts in Japanese.

## 6.2 Serbian<sup>3</sup>

### 6.2.1 Introduction

Island effects in Serbian have received far less attention than locality in German, English or Japanese (even though some intriguing work has been done). This short section will not present a full-fledged theory of locality effects in Serbian or even the status of the CED, but we will present two studies that show a surprising asymmetry. Concretely, acceptability judgment data indicates that PP-extraction (PPE) in Serbian shows the familiar subject/object asymmetries, while there are no such effects for Left Branch Extraction (LBE). This might very well be evidence for an account pursued by Ćavar & Fanselow 2002 and Bašić 2004, who argue that LBE

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<sup>3</sup>The experiments discussed are joint work with Ivana Mitrović

is best analysed as an instance of scattered deletion. If PPE involves subextraction of the kind observed in German and English, while LBE does not, CED effects would be expected for the former but not the latter. It also a possibility that what we call PPE in Serbian is in fact a hanging topic construction, similar to what we argued for in the English pied-piping case in section 5.2.

It is well-known that a number of Slavic languages allow LBE, while languages like English do not (Serbian example from Băsić 2004).

- (8) a. \*Whose did they close factory?  
 b. Koju su zatvorili fabriku?  
     which aux closed factory  
     'Which factory did they close?'

It has also been noted that LBE in Serbian does not violate the Subject condition. Both examples in (9) indicate that the left branch can originate in a preverbal subject position:

- (9) a. Ovaj nam je predsednik obećao veće plate.  
       this us-cl aux-cl president promised higher salaries  
       'This president promised us higher salaries.'  
 b. Čiju je on knjigu preveo?  
     whose aux he book translated  
     'Whose book did he translate?'  
     [Băsić 2004, ex. (61a) and ex. (64c)]

While Serbian does not allow preposition stranding, fronting a full PP is licit:

- (10) a. \*Kome su one objavile članak o?  
        whom aux they publish an.article about  
        'Who did they publish an article about?'  
 b. O kome su one objavile članak?  
     about whom aux they publish an.article  
     'Who did they publish an article about?'

Is LBE really completely insensitive to subject/object asymmetries? And is there a strong difference compared to postnominal subextraction? Bašić (2004, 34-36) concludes that "the extraction of postnominal elements and prenominal elements seems not to be subject to the same conditions". She also concedes, however, that "judgements concerning the grammaticality of extraction from DPs [...] seem to vary considerably".

The purpose of our study is to complement the empirical discussion of subject/object subextraction asymmetries in Serbian, a language in which controlled acceptability judgment studies have rarely been conducted.<sup>4</sup>

## 6.2.2 Experiment 13: Left Branch Extraction vs. PP-extraction

### 6.2.2.1 Design and Methodology

This experiment consists of two subexperiments. We look at subject/object asymmetries for Left Branch Extraction (LBE), on the one hand, and PP-extraction (PPE) on the other hand. For both constructions we manipulated the factors SUB-OBJ and EXTRACTION, which yields the following 4 conditions each:

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<sup>4</sup>The fact that subextraction phenomena in Serbian could strongly benefit from more rigid methodology is illustrated by the following example from Bošković 2005, p. 32:

- i      Čime<sub>i</sub>      ga    je [pretnja t<sub>i</sub>]      uplašila?  
           what.instr him is threat    scared  
           'The threat of what scared him?'

Many speakers strongly disagree with Bošković's judgments according to which subject subextraction is acceptable in Serbian and find (i) severely degraded. We added this sentence as filler item to our study below, where it was given an intermediate judgment of 3.45 with a relatively high standard deviation of 1.91. What the source of the disagreement about this example is will not be settled here. It is important to note, however, that its status is controversial.

(11) LEFT BRANCH EXTRACTION

a. *Subject, -extraction*

Čiji (10 prijatelji su te juče posle podne upoznali?  
Whose friends AUX you yesterday after noon meet?  
'Whose friends met you yesterday in the afternoon?'

b. *Subject, +extraction*

Čiji su te juče posle podne prijatelji upoznali?  
Whose AUX you yesterday after noon friends meet?  
'Whose friends met you yesterday in the afternoon?'

c. *Object, -extraction*

Čije prijatelje si juče posle podne upoznao?  
Whose friends AUX yesterday after noon meet?  
'Whose friends did you meet yesterday in the afternoon?'

d. *Object, +extraction*

Čije si juče posle podne upoznao prijatelje?  
Whose AUX yesterday after noon meet friends?  
'Whose friends did you meet yesterday in the afternoon?'

(12) PP-EXTRACTION

a. *Subject, -extraction*

Knjiga o Marku je prošle godine izazvala burne polemike.  
Books about Markus AUX last summer caused turbulent controversy  
'Books about Markus caused a controversy last summer.'

b. *Subject, +extraction*

O kome je prošle godine knjiga izazvala burne polemike?  
about whom AUX last summer books caused turbulent controversy  
'About whom did books cause a controversy last summer?'

c. *Object, -extraction*

Taj političar je prošle godine pročitao knjigu o Marku.  
that politician AUX last summer read books about Markus  
The politician read books about Markus last summer.'

d. *Object, +extraction*

O kome je prošle godine taj političar pročitao knjigu?  
about whom AUX last summer that politician read books  
'About whom did the politician read books last summer?'

Three lexicalizations of each condition were constructed and grouped into four Latin-square lists (two separate sets of lists for PPE and LBE). Each participant was presented 24 conditions and 36 fillers items of all levels of acceptability. 20 native speakers of Serbian with no prior training in linguistics participated in the study online.

### 6.2.2.2 Results

Interestingly, Serbian shows subject/object asymmetries with PP-extraction ( $\bar{x}=3.22$  vs. 5.50,  $t(1,59)=6.75$ ,  $p<.001$ ) but **not** with LBE ( $\bar{x}=3.35$  vs. 3.02,  $t(1,59)=.92$ ,  $p=.18$ ), as illustrated in Figure 6.3 2. The black lines represent the object conditions and the grey lines the subject conditions, the solid lines refer to the PPE and the dotted lines to the LBE conditions. It is immediately noticeable that the solid lines are almost perfectly parallel while the dotted lines show are non-parallel, indicating an interaction effect between the two factor. Two 2 way repeated measures ANOVAs confirm that there is a significant SUBOBJ and EXTRACTION for PPE ( $F(1,59)=170.031$ ,  $p<.001$ ) but not for LBE ( $F(1,59)=.104$ ,  $p<.749$ ).

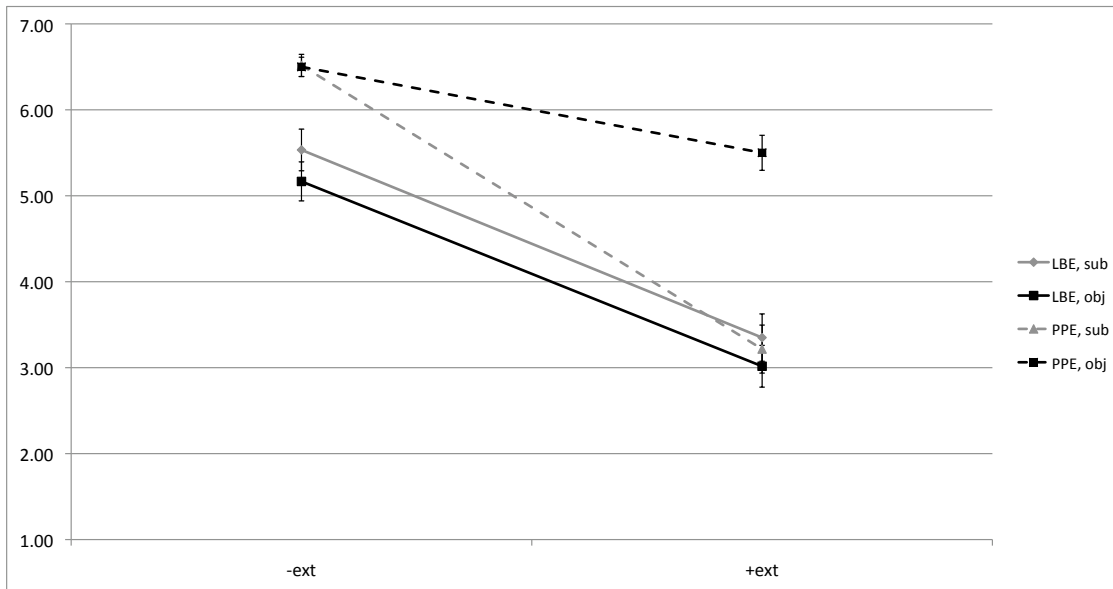


Figure 6.3: Left branch extraction and PP-extraction in Serbian

### 6.2.2.3 Discussion

Our results complement the intuitions from the theoretical literature and suggest that LBE is not sensitive to subject islands while PPE is. This prompted a number of authors to conclude that LBE is not a case of genuine subextraction: Bašić (2004) proposes an analysis in terms of remnant movement and Ćavar & Fanselow 2002 as well as Pereltsvaig (2006) - basing her argument on Colloquial Russian - advocate for a scattered deletion account. Other authors such as Bošković (2005) or Corver (1992) defend a more traditional analysis in terms of direct extraction.

It is possible that the PPE cases do not involve genuine subextraction either but are hanging topic constructions, similar to what we argued for pied-piping in English in section 5.2. It is not the purpose of this section to settle this theoretical debate. It seems fair to conclude, however, that any theory of LBE, PP-subextraction and the CED in Serbian must take results of the sort we presented into account. Furthermore, we hope that future research in the syntax of Serbian will employ acceptability judgment studies as a supplement to the theoretical discussion.

## Chapter 7

### Conclusion

About 200 pages and 13 experiments later it is time to reflect on what we have learned from this dissertation:

- We have strong reasons to believe that the CED remains a empirically valid generalization. Our studies all converge on the conclusion that complements are the preferred domain of extraction.
- Linguistics judgments are not matters of personal taste that are not amenable to scientific inquiry, but they can be subjected to experimental scrutiny. The reader is hopefully convinced that acceptability judgment studies are a useful tool when we are faced with controversial judgments. We have emphasized, however, that they should by no means be regarded as a replacement of theoretical work but as a helpful supplement.
- There is strong evidence that German NP-subextraction shows complement/non-complement asymmetries that are independent of freezing effects. Freezing is an additional factor that further decreases the acceptability. In other words, we have provided a diagnostic for base positions, i.e., we can make a three-way distinction between complements, specifiers, and derived specifiers.
- Theoretically, this seems to indicate that not one but *two* theories are needed: an account of the CED (possibly in terms of MSO) as well as an explanations of freezing effects.



- We have provided further evidence that the LCA in its most orthodox interpretation cannot be maintained for SOV languages like German.
- We saw that indirect objects are opaque domains, at least in German. This is expected under a CED-view of the world if they are specifiers or adjuncts. The situation becomes much more mysterious if indirect objects are analysed as complements (as in Baker 1988 or Larson 1988).
- When we investigate subextraction phenomena, we have to make sure that the phenomenon we are investigating in fact involves subextraction. Pied-piping in English, for instance, misled us into believing that English subjects are sometimes transparent, while in fact it is highly plausible that no genuine extraction has taken place. Left Branch Extraction in Serbian is likely to be a similar case.
- ATB-*was-für* split can ameliorate island violations in way comparable to PG-constructions. We have argued for an analysis in terms of sideways movement.

There are many issues we covered but many more we just touched upon, which leaves ample space for future research. Perhaps this dissertation will prove useful when the following issues are addressed in future work:

- What is the relation between grammaticality and acceptability? How big is the role that extra-grammatical factors such as processing and information structure play in general, and in the domain of islands in particular?
- A related question about the nature of our grammar arises. Is it gradient? Or is it binary and all the gradience we find is due to extra-grammatical factors? What does it mean for a sentence to violate a grammatical constraint?
- There are other languages that are sometimes claimed to violate the CED

(e.g. Turkish, Russian). Do these cases hold up in controlled acceptability judgment studies?

- The domain of islands in general is full of controversial judgments. What about adjunct islands cross-linguistically? Wh-islands? Counterexamples have been put forth to virtually all island constraints. Do they in fact hold as reported, and can acceptability judgment studies help us complete the picture?
- A more detailed empirical landscape of island constraints can help us answer the question of whether what we refer to as island phenomena even constitutes a coherent group. Perhaps some islands require syntactic or semantic explanations, others might be more amenable to processing or information structural accounts.

.

# Appendix A

## Instructions

### A.1 German

#### Sprachwissenschaftliche Studie

##### *Einverständniserklärung*

Diese Studie untersucht, wie MuttersprachlerInnen des Deutschen unterschiedliche Sätze in ihrer Sprache beurteilen. Die Informationen, die in dieser Studie gesammelt werden, werden streng vertraulich behandelt. Die Daten werden anonym und gemeinsam mit denen anderer Testpersonen statistisch ausgewertet. Mein Name scheint in der Datenanalyse NICHT auf.

Ich habe verstanden, dass dieses Experiment NICHT meiner persönlichen Weiterbildung dient. Die Studie dient dem Zweck, Erkenntnisse über die Beschaffenheit menschlicher Sprache zu gewinnen. Ich habe jederzeit die Möglichkeit das Experiment ohne Nennung eines Grundes abubrechen.

Fragen und Kommentare bitte an:

Johannes Jurka

University of Maryland, Department of Linguistics

jjurka@umd.edu

Ich bestätige, dass ich über achtzehn Jahre alt bin, dass ich oben angeführte Erläuterungen aufmerksam gelesen habe und dass ich mich bereit erkläre, an dieser sprachwissenschaftlichen Studie teilzunehmen.

*Name und Datum:* \_\_\_\_\_

*Unterschrift:* \_\_\_\_\_

#### Graduelle Akzeptabilitätsurteile

I. In dieser Studie werden Sie ersucht, Sätze des Deutschen Ihrem Sprachgefühl als MuttersprachlerIn folgend auf einer Skala von 1-7 einzustufen. Bitte beurteilen Sie die Sätze nach ihrer Akzeptabilität, d.h. ob sie Ihnen intuitiv als natürliche Sätze des Deutschen vorkommen.

- Wenn Sie glauben, dass der Satz ein einwandfreier Satz des Deutschen ist, geben Sie ihm eine hohe Bewertung (6 oder 7).

- Wenn Sie glauben, dass der Satz kein möglicher Satz des Deutschen ist, dann geben Sie ihm eine niedrige Bewertung (1 oder 2).
- Manche Sätze kommen Ihnen vielleicht nicht komplett inakzeptabel vor, klingen aber auch nicht ganz perfekt - geben Sie solchen Sätzen eine mittelmäßige Bewertung (3-5).

II. Wichtig ist, dass es NICHT um die Plausibilität eines Satzes geht. Bitte beurteilen Sie die Sätze nur danach, ob sie sich für Sie als mögliche Sätze des Deutschen anhören oder nicht. Folgende Beispiele illustrieren diesen Punkt:

(1) Die Kinder haben den Weihnachtsbaum mit Girlanden geschmückt.  
(schlecht) 1 2 3 4 5 6 7 (gut)

(2) Die Kinder haben Girlanden auf den Weihnachtsbaum geschmückt.  
(schlecht) 1 2 3 4 5 6 7 (gut)

(3) Das blassblaue Nilpferd hat mit dem Hängebauchschwein Schach gespielt.  
(schlecht) 1 2 3 4 5 6 7 (gut)

Beispiel (2) beschreibt eine durchaus plausible Situation. Dennoch empfinden die meisten DeutschsprecherInnen diesen Satz als inakzeptabel (im Gegensatz zu (1), der für die meisten SprecherInnen einwandfrei ist).

Beispiel (3), andererseits, beschreibt eine relativ seltsame Situation. Dennoch wäre es problemlos möglich so ein Szenario (etwa in einem Zeichentrickfilm) mit diesem Satz zu beschreiben.

III. Außerdem ist es wichtig zu betonen, dass es NICHT darum geht zu beurteilen, ob ein Satz den Regeln des Dudens oder der Schulgrammatik entspricht bzw. ob der Satz in einem formellen Kontext verwendet wird. Bei der Beurteilung geht es lediglich darum, zu bewerten, ob sich ein Satz intuitiv natürlich anhört und in einer angemessenen Situation von einer SprecherIn des Deutschen verwendet werden könnte oder nicht.

Zum Beispiel könnte in einem Schulaufsatz ausgebessert werden, dass "während" den zweiten Fall verlangt, z.B. "während des Essens". Die meisten SprecherInnen des Deutschen würden jedoch umgangssprachlich folgenden Satz von Ihrem Sprachgefühl her als einwandfreien und natürlichen Satz des Deutschen einstufen.

Des Weiteren spielen Rechtschreibung (egal, ob alte oder neue) und Beistrichsetzung KEINE Rolle für die Beurteilung der Sätze in diesem Experiment.

(4) Ich habe während dem Essen mit meiner Freundin telefoniert..  
(schlecht) 1 2 3 4 5 6 7 (gut)

Des Weiteren spielen Rechtschreibung (egal, ob alte oder neue) und Beistrichsetzung KEINE Rolle für die Beurteilung der Sätze in diesem Experiment.

Bevor wir beginnen, hier sind einige Beispiele für mögliche Bewertungen:

(5) Welchen Rum hat denn der Kellner das Cola und in ein Glas geleert?  
(schlecht) 1 2 3 4 5 6 7 (gut)

(6) Welchen Politiker hast du denn gestern vor dem Rathaus getroffen?  
(schlecht) 1 2 3 4 5 6 7 (gut)

(7) Welches Buch fragst du dich denn oft, ob der Student gelesen hat?  
(schlecht) 1 2 3 4 5 6 7 (gut)

Ich würde Sie zuletzt noch bitten, die Sätze möglichst schnell und Ihrer ersten Intuition folgend zu beurteilen. Sobald Sie bereit sind, kann es auf der nächsten Seite losgehen!

**Vielen Dank!**

## A.2 English

I hereby confirm that I am over 18 years of age and that I am a native speaker of English. I am aware that I am participating in a linguistic experiment. This study is fully anonymous and the data will only be used for statistical analysis. I can abort the experiment at any time.

1. In the following study you will be asked to rate sentences of English according to your intuitive judgments as a native speaker. The experiment will take between 10-15 minutes of your time. If you have any questions or comments please email: [jjurka@umd.edu](mailto:jjurka@umd.edu).

### Sentence Acceptability Ratings

For the list of sentences below, please rate whether each sentence seems like an acceptable sentence in everyday English.

- If you think that the sentence sounds acceptable and possible in English, then you should give it a high rating (6 or 7)
- If you think that the sentence does not sound like a possible sentence of English, then you should give it a low rating (1 or 2).
- Some sentences may not sound like totally impossible sentences, but are also not completely acceptable ? you could give those a more intermediate rating (3-5).

2. You are NOT being asked to judge the plausibility of the meaning of the sentence; you are simply being asked to judge whether the sentence sounds like possible English or not. Consider the following examples:

Example (9) below describes a highly likely scenario, but most English speakers find it unacceptable (unlike a similar sentence in (8)), and could not use it.

(8) The children decorated the tree with sparkling ornaments.

(bad) 1 2 3 4 5 6 7 (good)

(9) The children decorated the sparkling ornaments onto the tree.

(bad) 1 2 3 4 5 6 7 (good)

(10) The purple elephant played chess with the balding porcupines.

(bad) 1 2 3 4 5 6 7 (good)

In contrast, example (10) describes an implausible and outlandish situation, but if it were necessary to describe such a crazy scenario, you could use the sentence in (10) without any problem.

3. You are also NOT being asked to judge whether the sentence is acceptable according to 'school grammar', i.e., the rules you may have learned in high school English, or in writing classes. You're just being asked to judge whether the sentence sounds like natural English that you or other speakers of English might be able to use.

For example, you might have learned not to end a sentence with a preposition. However, while the example (d) ends with a preposition, most English speakers find it completely natural, acceptable sentences.

- (11) The old woman hated the people who she was traveling with.  
(bad) 1 2 3 4 5 6 7 (good)

Here are some more example sentences and ratings before you move on to the test:

- (12) Jane threw out the lemon that Rick squirted the lime and in his drink.  
(bad) 1 2 3 4 5 6 7 (good)

- (13) I ate the chili that Mary left out on the table.  
(bad) 1 2 3 4 5 6 7 (good)

- (14) Which book do you wonder whether James read yesterday?  
(bad) 1 2 3 4 5 6 7 (good)

Please give your ratings by either clicking the number on the screen or pressing the button on your keyboard. Thank you!

### A.3 Serbian

Da biste učestvovali u ovom ispitivanju, morate imati više od 18 godina i morate biti izvorni govornik srpskog jezika. Ovo je lingvistički eksperiment koji je u potpunosti anoniman. Rezultati ispitivanja biće upotrebljeni u svrhe statističke analize. Možete odustati od ovog istraživanja u svakom momentu bez ikakvog objašnjenja. Ukoliko imate bilo kakva pitanja u vezi s ovim istraživanjem, molim Vas da kontaktirate Ivanu Mitrović na imejl adresu: hellasbb@gmail.com.

#### Rangiranje prihvatljivosti rečenica

1. Molim Vas da dole navedene rečenice rangirate po prihvatljivosti u svakodnevnom srpskom jeziku.

- Ako mislite da je rečenica u potpunosti prihvatljiva i moguća u srpskom jeziku, ocenite je visoko (6 ili 7 poena).
- Ako mislite da rečenica ne zvuči kao moguća rečenica srpskog jezika, dajte joj nisku ocenu (1 ili 2 poena).
- Neke od rečenica mogu zvučati kao ne baš potpuno neprihvatljive a u isto vreme i ne baš potpuno prihvatljive. U tom slučaju ih ocenite prosečnom ocenom (3-5 poena).

2. Ono što NE treba da ocenjujete je značenje rečenice. Samo treba da ocenite da li rečenica zvuči kao moguća rečenica u srpskom jeziku bez obzira na njeno značenje. Na primer, rečenica u primeru (b) opisuje krajnje moguću situaciju, ali je većina govornika srpskog jezika ocenjuje kao neprihvatljivu i ne bi je upotrebili (za razliku od slične rečenice u primeru (a)). Rečenica u primeru (c) opisuje veoma čudnu situaciju, ali ukoliko je potrebno opisati baš takvu situaciju, sasvim je moguće upotrebiti rečenicu u primeru (c).

a      Okitili smo jelku svetlećim ukrasima.  
(loše)   1   2   3   4   5   6   7   (dobro)

b      Okitili smo svetleće ukrase jelkom.  
(loše)   1   2   3   4   5   6   7   (dobro)

c      Ljubičasti slon je igrao šah s golobradim ježevima.  
(loše)   1   2   3   4   5   6   7   (dobro)

3. Takodje, NE treba da ocenjujete prihvatljivost rečenica po gramatičkim pravilima koje ste učili u školi; to jest, po pravilima koja su napisana u gramatikama. Treba da ocenite prihvatljivost rečenica po tome da li Vama one zvuče kao moguće rečenice u srpskom jeziku koje biste Vi ili neki drugi govornici srpskog jezika mogli upotrebiti.



Ono što nas zanima je šta Vama zvuči kao dobra rečenica u srpskom a ne šta kažu gramatička pravila.

Na primer, u školi ste naučili gramatičko pravilo po kome oblik glagola biti za prvo lice množine glasi *bismo*. Iako ovo pravilo postoji u gramatici, veliki broj govornika srpskog jezika koristi oblik *bi*. Gramatike ocenjuje ovaj oblik kao nepravilan, dok ga izvorni govornici srpskog jezika upotrebljavaju i ne ocenjuju ga kao nepravilan (primer (d)).

d      Mi bi išli u grad.  
(loše)    1    2    3    4    5    6    7    (dobro)

4. Neke rečenice u srpskom jeziku su u potpunosti prihvatljive iako su poprilično dugačke i složene. Rečenica prikazana u primeru (e) može izgledati na prvi pogled pomalo dugačka i neshvatljiva ali je u potpunosti prihvatljiva (iako poduža). Dakle, ocenili biste je visokom ocenom 6 ili 7 poena. Za razliku od nje, rečenica u primeru (b) je kratka ali je potpuno neprihvatljiva.

e      Dinkić je rekao da je sa MMF-om na samom početku višednevnih razgovora dogovoreno da deficit budžeta bude četiri odsto bruto domaćeg proizvoda, a ne 3,5 odsto koliko je MMF ranije tražio i dodao da neće biti problema oko budžeta za 2010, ali da ostaje izazov kako na srednji rok održati ravnotežu, kao i to da su prihodi budžeta bolji nego pred prethodni dolazak misije.

Evo još nekoliko primera rečenica i ocena istih pre nego što počnete s istraživanjem:

f      Jovana je bacila limun koji je Marko iscedio pomorandžu i u njegovo piće.  
(loše)    1    2    3    4    5    6    7    (dobro)

g      Pojela sam kolač što je mama ostavila na stolu.  
(loše)    1    2    3    4    5    6    7    (dobro)

h      Koje pismo se pitaš da li je Marko napisao?  
(loše)    1    2    3    4    5    6    7    (dobro)

Eksperiment: Molimo Vas da zaokružite jedan od ponuđenih brojeva (1-7) za svaku rečenicu.

**Ovo je kraj istraživanja!**  
**Hvala Vam što ste učestvovali u njemu!**

## A.4 Japanese

1. この調査では、日本語母語話者がどのような文を自然と感じるかどうかを調べています。これから読まれる文に対して、直感的に自然な日本語の文であるかどうかを1から7までの数字を使って判断していただきます。

- もし読んだ文が自然な日本語の文であると感じられた場合は、6や7といった高い数字を選んでクリックしてください。
- もし読んだ文が不自然な日本語の文であると感じられた場合は、1や2といった低い数字をクリックしてください。
- もし読んだ文がものすごく不自然なわけではないものの、かと言って自然な文だとも言いがたいという場合は、3から5といった中間の数字をクリックしてください。

2. この実験で言うところの「自然・不自然」な文というのは、文に書かれている内容が自然な状況を描写しているか、ということではなく、日本語の文として可能な文であるかどうか問われています。

例えば、次の例文をご覧ください。

- 下の (a) と (b) の例文では、同じような状況が描写されていることがわかりますが、普通の日本語母語話者でしたら、(a) のほうが自然であるのに対し (b) のほうは日本語の文としては不自然である、と感じられるはずです。
- また、(c) の例文の場合はあまり現実では起きないような状況が描かれていますが、その一方で日本語の文としてはごく自然なものであると言えます。

- (a) その男の子は隣町からやってきた転校生の女の子に恋をした。

(不自然) 1 2 3 4 5 6 7 (自然)

- (b) その男の子は隣町からやってきた転校生の女の子を恋をした。

(不自然) 1 2 3 4 5 6 7 (自然)

- (c) 紫色の恐竜が街の中をうれしそうに駆け回っていた。

(不自然) 1 2 3 4 5 6 7 (自然)

3. また、本調査はあなたが学校文法をどれだけ正しく覚えているかをテストするものでもありません。

例えば学校の国語の授業では、「ら抜き言葉」は正しくない日本語であって、「食べれない」というのは間違いで「食べられない」と言うべきである、と習われたかもしれませんが。しかし、本調査で対象としているのは日本語を母語として話すあなたの言葉の直感であり、母語話者が自然であると判断するかどうか、またはこういった文を書いたり発話することがあるか、ということです。ですから自分の答えに自信を持って回答してください。

また調査の中で使われている文には非常に長いものもありますが、長いという理由だけで判断せずに、しっかり注意して文を読んでください。例えば下の(d)の例文はわりと複雑ですが、実際読むとごく自然な文であることがわかります。

- (d) 軍隊の幹部が政府の方針に反対し、軍事力を戦争に備えて増強させるべきであると主張しているというニュースに関して、大統領は、政府と軍隊間での対話は着々と進んでおり、近日中に合意が得られるはずであると説明した。

(不自然) 1 2 3 4 5 6 7 (自然)

それでは本実験に進む前に、以下にいくつか練習問題があるので回答してみてください:

- (e) いつその学生は先生が宿題を出したと聞いたの?

(不自然) 1 2 3 4 5 6 7 (自然)

- (f) 誰もが何を食べなかったかそのシェフはウエーターに聞いた。

(不自然) 1 2 3 4 5 6 7 (自然)

- (g) どの新しいハイブリッド車をお客さんが試運転したかどうか販売店の店主は知りたがっていた。

(不自然) 1 2 3 4 5 6 7 (自然)

最後に、各文の自然さを判断する場合、あまり考え込まずに直感を生かして答えるようにしてください。それでは準備ができ次第、クリックして実験を開始してください。

次のページからは実際に数字をクリックするとデータが記録され、自動的に次の文が提示されます。最後に Thanks! というメッセージがでてきたらその時点で実験は終了します。

# Appendix B

## Items

### B.1 Experiment 1

#### (1) Template

- a. Was für eine \$NOUN1 hat denn den \$NOUN2 \$VERB?  
What for a \$NOUN1 has PRT the \$NOUN2 \$VERB
- b. Was für einen \$NOUN1 hat denn die \$NOUN2 \$VERB?  
What for a clear has PRT the \$NOUN1 \$VERB
- c. Was hat denn für eine \$NOUN1 den \$NOUN2 \$VERB?  
What has PRT for an \$NOUN1 the \$NOUN2 \$VERB
- d. Was hat für eine \$NOUN1 denn den \$NOUN2 \$VERB?  
What has for an \$NOUN1 PRT the \$NOUN2 \$VERB
- e. Was hat denn die \$NOUN1 für einen \$NOUN2 \$VERB?  
What has PRT the \$NOUN1 for a \$NOUN2 \$VERB
- f. Was hat denn für einen \$NOUN2 die \$NOUN1 \$VERB?  
What has PRT for a \$NOUN2 the \$NOUN1 \$VERB

#### (2) Lexicalizations

- a. \$NOUN1  
(1) Käfer (beetle), (2) Insekt (insect), (3) Katze (cat), (4) Lehrer (teacher),  
(5) Journalist (journalist), (6) Politiker (politician), (7) Künstler (artist),  
(8) Unternehmer (entrepreneur), (9) Sammler (collector), (10) Raubtier  
(wild animal), (11) Sportler (athlete), (12) Handwerker (carpenter), (13)  
Arzt (doctor), (14) Professor (professor), (15) Bär (bear), (16) Händler  
(merchant), (17) Musiker (musician), (18) Hund (dog)
- b. \$NOUN2  
(1) Beamte (clerk), (2) Affe (monkey), (3) Teppich (carpet), (4) Buch  
(book), (5) Artikel (article), (6) Vertrag (contract), (7) Gebäude (build-  
ing), (8) Yacht (yacht), (9) Gemälde (painting), (10) Forscher (researcher),  
(11) Turnier (tournament), (12) Schaden (damage), (13) Haustier (pet),  
(14) Vortrag (presentation), (15) Fisch (fish), (16) Produkt (product),  
(17) Roman (novel), (18) Knochen (bone)
- c. \$VERB  
(1) beißen (bite), (2) stechen (sting), (3) kratzen (scratch), (4) lesen

(read), (5) schreiben (write), (6) unterschreiben (sign), (7) bemalen (paint), (8) kaufen (buy), (9) ersteigern (buy at an auction), (10) angreifen (attack), (11) gewinnen (win), (12) reparieren (repair), (13) untersuchen (investigate), (14) halten (hold), (15) fangen (catch), (16) verkaufen (sell), (17) vertonen (set to music), (18) vergraben (bury)

## B.2 Experiment 2

### (3) Template

- a. Gestern wurde einem \$NOUN1 ein \$NOUN2 \$VERB.  
yesterday was a.DAT \$NOUN1 a.NOM \$NOUN2 \$VERB
- b. Gestern wurde ein \$NOUN2 einem \$NOUN1 \$VERB.  
yesterday was a.NOM \$NOUN2 a.DAT \$NOUN1 \$VERB
- c. Was wurde denn einem \$NOUN1 für ein \$NOUN2 \$VERB?  
what was PRT a.DAT \$NOUN1 for a.NOM \$NOUN2 \$VERB
- d. Was wurde denn für einem \$NOUN1 ein \$NOUN2 \$VERB?  
what was PRT for a.DAT \$NOUN1 a.NOM \$NOUN2 \$VERB
- e. Was wurde denn für ein \$NOUN2 einem \$NOUN1 \$VERB?  
what was PRT for a.NOM \$NOUN2 a.DAT \$NOUN1 \$VERB
- f. Was wurde denn ein \$NOUN2 für einem \$NOUN1 \$VERB?  
what was PRT a.NOM \$NOUN2 for a.DAT \$NOUN1 \$VERB
- g. Was wurde denn für einem \$NOUN1 für eine \$NOUN2 \$VERB?  
what was PRT for a.DAT \$NOUN1 for a.NOM \$NOUN2 \$VERB
- h. Was wurde denn für eine \$NOUN2 für einem \$NOUN1 \$VERB?  
what was PRT for a.NOM \$NOUN2 for a.DAT \$NOUN1 \$VERB

### (4) Lexicalizations

- a. \$NOUN1  
(1) Prüferin (examiner.fem), (2) Dozentin (lecturer.fem), (3) Offizier (officer), (4) Babysitter (baby sitter), (5) Kommissar (detective), (6) Polizistin (police woman), (7) Krimineller (criminal), (8) Freundin (friend.fem), (9) Mitarbeiter (co-worker), (10) König (king), (11) Trainer (trainer), (12) Psychiater (psychiatrist), (13) Regisseur (director), (14) Malerin (painter.fem), (15) Arbeitsloser (unemployed), (16) Sozialarbeiterin (social worker.fem), (17) Operndirektor (impresario), (18) Zeugin (witness), (19) Minister (minister), (20) Kaiser (emperor), (21) Lehrerin (teacher.fem), (22) Arzt (doctor), (23) Mörder (murderer), (24) Professor (professor)
- b. \$NOUN2  
(1) Kandidat (candidate), (2) Sekräterin (secretary.fem), (3) Soldat (soldier), (4) Kleinkind (baby), (5) Verbrecher (criminal), (6) Geisel (hostage), (7) Anwalt (attorney), (8) Baby (baby), (9) Assistent (assistant), (10)

Bote (messenger), (11) Spieler (player), (12) Patient (patient), (13) Schauspieler(in) (actress), (14) Model (model), (15) Berater(in) (advisor.fem), (16) Obdachloser (homeless person), (17) Sänger(in) (singer.fem), (18) Verdächtiger (suspect), (19) Beamte (clerk), (20) Frau (woman), (21) Schüler (student), (22) Patientin (patient.fem) (23) Pflichtverteidiger (court-appointed lawyer), (24) Student (student)

- c. \$VERB  
 (1) zeigen (show), (2) in Aussicht stellen (hold out), (3) melden (report to), (4) anvertrauen (confide in), (5) in die Arme treiben (chase into the arms of), (6) ausliefern (extradite), (7) vermitteln (put in contact with), (8) überlassen (leave to), (9) zuteilen (assign), (10) schicken (send), (11) empfehlen (recommend), (12) übergeben (hand over), (13) vorschlagen (propose to), (14) präsentieren, (15) zuweisen (allot), (16) in Betreuung geben (to give in custody), (17) streitig machen (to challenge for), (18) gegenüberstellen (confront with), (19) entziehen (deprive), (20) anbieten (offer), (21) beschreiben (describe to), (22) überweisen (refer to), (23) zulosen (draw with), (24) vorstellen (introduce)

## B.3 Experiment 3

### B.3.1 Experiment 3A

- (5) a. Ich frage mich, was gestern am Nachmittag für ein \$NOUN1  
 I ask myself what yesterday on.the afternoon for a \$NOUN1  
 \$VERB1 ist.  
 \$VERB1 is.
- b. Ich frage mich, was für ein \$NOUN1 gestern am Nachmittag  
 I ask myself what for a \$NOUN1 yesterday on.the afternoon  
 \$VERB1 ist.  
 \$VERB1 is.
- c. Ich frage mich, was für einen \$NOUN2 der \$NOUN1 gestern  
 I ask myself what for a pilot the \$NOUN1 yesterday  
 am Nachmittag \$VERB2 hat.  
 on.the afternoon \$VERB2 has
- d. Ich frage mich, was der \$NOUN1 gestern am Nachmittag für  
 I ask myself what the man yesterday on.the afternoon for  
 einen \$NOUN2 \$VERB2 hat.  
 a \$VERB2 \$VERB2 has
- e. Ich frage mich, was für ein \$NOUN1 gestern am Nachmittag  
 I ask myself what for a \$NOUN1 yesterday on.the afternoon  
 \$VERB2 wurde.  
 \$VERB2 was

- f. Ich frage mich, was gestern am Nachmittag für ein \$NOUN1  
I ask myself what yesterday on.the afternoon for a \$NOUN1  
\$VERB2 wurde.  
\$VERB2 was
- g. Ich frage mich, was für ein \$NOUN1 gestern am Nachmittag  
I ask myself what for a \$NOUN1 yesterday on.the afternoon  
den \$NOUN2 \$VERB2 hat  
the \$NOUN2 \$VERB2 has
- h. Ich frage mich, was gestern am Nachmittag für ein \$NOUN1  
I ask myself what yesterday on.the afternoon for a \$NOUN1  
den \$NOUN2 \$VERB2 hat  
the \$NOUN2 \$VERB2 has
- i. Ich frage mich, was für ein Mann gestern am  
I ask myself what yesterday on.the afternoon for a  
Nachmittag \$VERB3 hat.  
man \$VERB3 has

## (6) Lexicalizations

- a. \$NOUN1  
(1) Mann (man), (2) Frau (woman), (3) Detektiv (detective), (4) Pensionist (pensioner), (5) Handwerker (carpenter), (6) Vogel (bird), (7) Ganove (crook), (8) Politiker (politician), (9) Schauspieler (actor), (10) Sportler (athlete), (11) Musiker (musician), (12) Adelige (noble man), (13) Polizist (police officer), (14) Maler (painter), (15) Autofahrer (driver), (16) Radfahrer (bicyclist), (17) Arzt (doctor), (18) Student (student), (19) Schüler (student), (20) Verwandter (relative), (21) Anwalt (attorney), (22) Soldat (soldier), (23) Sozialarbeiter (social worker), (24) Kellner (waiter), (25) Löwe, (26) Sekretär (secretary), (27) Rennfahrer (race car driver), (28) Sammler (collector), (29) Kommissar (inspector), (30) Tiger (tiger),
- b. \$NOUN2  
(1) Pilot (pilot), (2) Mitarbeiter (co-worker), (3) Dieb (thief), (4) Nachbar (neighbor), (5) Architekt (architect), (6) Käfer (beetle), (7) Passanten (bystander), (8) Minister (minister), (9) Regisseur (director), (10) Journalist (journalist), (11) Sänger (singer), (12) Pudelpudel (poodle), (13) Demonstrant (demonstrator), (14) Prinz (prince), (15) Anhalter (hitchhiker), (16) Fußgänger (pedestrian), (17) Patient (patient), (18) Hausmeister (janitor), (19) Lehrer (teacher), (20) Hund (dog), (21) Richter (judge), (22) Zivilist (civilian), (23) Obdachlose (homeless person), (24) Gast (guest), (25) Büffel (buffalo), (26) Buchhalter (accountant), (27) Tänzer (dancer), (28) Künstler (artist), (29) Verdächtiger (suspect), (30) Hirsch (deer)

c. \$VERB1

(1) erscheinen (appear), (2) kommen (come), (3) einschlafen (fall asleep), (4) einnicken (doze off), (5) stolpern (stumble), (6) schlüpfen (hatch), (7) auftauchen (surface), (8) ausrutschen (slip), (9) sterben (die), (10) ausfallen (drop out), (11) zusammenbrechen (collapse), (12) aufschrecken (startle up), (13) stürzen (fall), (14) verunfallen (have an accident), (15) aufwachen (wake up), (16) unkommen (die in an accident), (17) abstürzen (crash), (18) scheitern (fail), (19) ankommen (arrive), (20) vorbeikommen (drop by), (21) fallen (die in war), (22) verschwinden (vanish), (23) eintreffen (arrive), (24) entwischen (escape), (25) hervorstechen (stand out), (26) verunglücken (have an accident), (27) (28) ausrasten (freak out), (29) straucheln (falter), (30) entkommen (escape)

d. \$VERB2

(1) sehen (see), (2) entlassen (fire), (3) erwischen (catch), (4) beschimpfen (insult), (5) verständigen (contact), (6) fressen (eat), (7) überfallen (mug), (8) bestechen (bribe), (9) kritisieren (criticize), (10) ignorieren (ignore), (11) begleiten (accompany), (12) auslachen (laugh at), (13) zurechtweisen (reprimand), (14) portraituren (portray), (15) mitnehmen (bring along), (16) überholen (overtake), (17) behandeln (treat), (18) belästigen (molest), (19) zwicken (pinch), (20) streicheln (pet), (21) einladen (invite), (22) retten (save), (23) betreuen (advise), (24) bedienen (wait on), (25) erspähen (spot), (26) kritisieren (criticize), (27) entdecken (discover), (28) unterstützen (support), (29) verhören (interrogate), (30) jagen (hunt)

e. \$VERB3

(1) schlafen (sleep), (2) schnarchen (snore), (3) weinen (cry), (4) lachen (laugh), (5) husten (cough), (6) zwitschern (twitter), (7) singen (sing), (8) tanzen (dance), (9) musizieren (play music), (10) teilnehmen (participate), (11) spielen (play), (12) sprechen (talk), (13) trinken (drink), (14) rauchen (smoke), (15) bremsen (hit the breaks), (16) gähnen (yawn), (17) operieren (perform surgery), (18) lernen (study), (19) lesen (read), (20) basteln (do craft), (21) lügen (lie), (22) angreifen (attack), (23) helfen (help), (24) abkassieren (cash up), (25) dosen (dose), (26) telefonieren (be on the phone), (27) niesen (sneeze), (28) mitbieten (participate in an auction), (29) nachdenken (ponder), (30) fressen (eat)

### B.3.2 Experiment 3B

- (7) a. Was für \$NOUN1 sind denn am Nachmittag \$VERB1?  
what for \$NOUN1 are PRT on.the afternoon \$VERB1



- b. Was sind denn für \$NOUN1 am Nachmittag \$VERB1?  
what are PRT for \$NOUN1 on.the afternoon \$VERB1
- c. Was für \$NOUN1 haben denn am Nachmittag \$VERB2?  
what for \$NOUN1 have PRT on.the afternoon \$VERB2
- d. Was haben denn für \$NOUN1 am Nachmittag \$VERB2?  
what have PRT for \$NOUN1 on.the afternoon \$VERB2

## (8) Lexicalizations

- a. \$NOUN1  
(1) Männer (men), (2) Frauen (women), (3) Mädchen (girls), (4) Studenten (students), (5) Schülerinnen (students.fem), (6) Radfahrerinnen (cyclists.fem), (7) Ganoven (crooks), (8) Sportlerinnen (athletes.fem), (9) Gefange (prisoners), (10) Politiker (policitian), (11) Musikerinnen (musicians), (12) Kinder (children)
- b. \$VERB1  
(1) ankommen (arrive), (2) abreisen (depart), (3) weggehen (leave), (4) zurückkommen (return), (5) davonlaufen (run away), (6) davonfahren (drive away), (7) fliehen (flee), (8) mitlaufen (participate in a race), (9) entkommen (escape), (10) auftauchen (appear), (11) auftreten (perform), (12) weglaufen (run away)
- c. \$VERB2  
(1) arbeiten (work), (2) singen (sing), (3) warten (wait), (4) reden (talk), (5) telefonieren (talk on the phone), (6) plaudern (chat), (7) aufgeben (give up), (8) mitspielen (play along), (9) kooperieren (cooperate), (10) verhandeln (negotiate), (11) spielen (play), (12) tratschen (gossip)

## B.4 Experiment 4

- (9) a. \$MATRIXPREDICATE, was für ein \$NOUN1 gestern am \$MATRIXPREDICATE what for a \$NOUN1 yesterday on.the Nachmittag den \$NOUN2 \$VERB hat.  
afternoon the \$NOUN2 \$VERB has
- b. \$MATRIXPREDICATE, was für einen \$NOUN2 der \$NOUN1 gestern \$MATRIXPREDICATE what for a \$NOUN2 the \$NOUN1 yesterday am Nachmittag \$VERB hat.  
on.the afternoon \$VERB has
- c. \$MATRIXPREDICATE, was gestern am Nachmittag \$MATRIXPREDICATE what yesterday on.the afternoon for für ein \$NOUN1 den \$NOUN2 \$VERB hat.  
a \$NOUN1 the \$NOUN2 \$VERB has

- d. \$MATRIXPREDICATE was den \$NOUN2 gestern am Nachmittag  
\$MATRIXPREDICATE what the clerk yesterday on the afternoon  
für ein \$NOUN1 \$VERB hat.  
for a \$NOUN1 bitten has
- e. Ich frage mich, was der \$NOUN1  
\$MATRIXPREDICATE what the \$NOUN1 yesterday on the afternoon  
gestern am Nachmittag für einen \$NOUN2 \$VERB hat.  
for a \$NOUN2 \$VERB has

(10) **Lexicalizations**

- a. \$MATRIXPREDICATE  
(1) ich frage mich (I ask myself), (2) ich bin nicht sicher (I am not sure), (3) ich weiß nicht (I do not know), (4) ich möchte wissen (I would like to know), (5) es ist unklar (it is unclear), (6) ich habe mich erkundigt (I inquired), (7) ich habe nachgefragt (I asked), (8) ich wollte herausfinden (I wanted to find out), (9) ich frage mich (I ask myself), (10) ich habe nachgefragt (I asked), (11) man kann nicht sagen (one can't tell), (12) ich weiß nicht (I do not know), (13) ich möchte wissen (I would like to know), (14) es ist unklar (it is unclear), (15) ich habe mich erkundigt (I inquired)
- b. \$NOUN1  
(1) Käfer (beetle), (2) Affe (monkey), (3) Kater (male cat), (4) Lehrer (teacher), (5) Sportler (athlete), (6) Teamleiter (team leader), (7) Visagist (make-up artist), (8) Tiger (tiger), (9) Arzt (doctor), (10) Polizist (police officer), (11) Vogel (bird), (12) Sammler (collector), (13) Architekt (architect), (14) Reporter (reporter), (15) Student (student)
- c. \$NOUN2  
(1) Beamte (clerk), (2) Fisch (fish), (3) Hund (dog), (4) Schüler (student), (5) Journalist (journalist), (6) Mitarbeiter (co-worker), (7) Schauspieler (actor), (8) Forscher (researcher), (9) Patient (patient), (10) Verbrecher (criminal), (11) Wanderer (hiker), (12) Künstler (artist), (13) Handwerker (carpenter), (14) Star (star), (15) Professor (professor)
- d. \$VERB1  
(1) beißen (bite), (2) fressen (eat), (3) kratzen (scratch), (4) prüfen (test), (5) beschimpfen (berate), (6) entlassen (fire), (7) schminken (put make-up on), (8) attackieren (attack), (9) untersuchen (examine), (10) verfolgen (chase), (11) verletzen (hurt), (12) unterschätzen (underestimate), (13) verständigen (notify), (14) beleidigen (insult), (15) belästigen (molest)

## B.5 Experiment 5

- (11)
- a. DET \$NOUN2 zu \$VERB hat DET \$NOUN1 \$MATRIXPREDICATEA.  
The \$NOUN2 to \$VERB has the \$NOUN1 \$MATRIXPREDICATEA
  - b. Welche/n \$NOUN2 hat denn zu \$VERB DET \$NOUN1  
Which \$NOUN2 has PRT to \$VERB the \$NOUN1  
\$MATRIXPREDICATEA?  
\$MATRIXPREDICATEA
  - c. DET \$NOUN1 hat DET \$NOUN2 zu \$VERB \$MATRIXPREDICATEB.  
The \$NOUN1 has the \$NOUN2 to \$VERB \$MATRIXPREDICATEB
  - d. Welche/n \$NOUN2 hat denn DET \$NOUN1 zu \$VERB  
Which \$NOUN2 has PRT the \$NOUN1 to \$VERB  
\$MATRIXPREDICATEB?  
\$MATRIXPREDICATEB
  - e. Es hat DET \$NOUN1 \$MATRIXPREDICATEA DET \$NOUN2 zu  
it has the \$NOUN1 \$MATRIXPREDICATEA the \$NOUN2 to  
\$VERB.  
\$VERB
  - f. Welche/n \$NOUN2 hat (es) denn DET \$NOUN1  
Which \$NOUN2 has (it) PRT the \$NOUN1  
\$MATRIXPREDICATEA zu \$VERB?  
\$MATRIXPREDICATEA to \$VERB
  - g. DET \$NOUN1 hat \$MATRIXPREDICATEB DET \$NOUN2 zu \$VERB.  
The \$NOUN1 has \$MATRIXPREDICATEB the \$NOUN2 to \$VERB
  - h. Welche \$NOUN2 hat denn DET \$NOUN1 \$MATRIXPREDICATEB zu  
Which \$NOUN2 has PRT the \$NOUN1 \$MATRIXPREDICATEB to  
\$VERB?  
\$VERB

(12) **Lexicalizations**

- a. \$NOUN1  
(1) Studentin (student.fem), (2) Sozialarbeiterin (social worker.fem),  
(3) Praktikant (intern), (4) Regisseur (director), (5) Kind (child), (6)  
Mann (man), (7) Priester (priest), (8) Architektin (architect.fem), (9)  
Journalist (journalist), (10) Pianist (pianist), (11) Immobilienhändler  
(real estate agent), (12) Polizist (police officer)
- b. \$NOUN2  
(1) Diplomarbeit (master thesis), (2) Asylwerber, (3) Patient (patient),  
(4) Schauspieler (actor), (5) Esel (donkey), (6) Badezimmer (bath-  
room), (7) Bischof (bishop), (8) Projekt (project), (9) Artikel (arti-  
cle), (10) Sonate (sonata), (11) Grundstück (property), (12) Gebäude  
(building)

- c. \$VERB  
 (1) schreiben (write), (2) helfen (help), (3) behandeln (treat), (4) unterstützen (support), (5) streicheln (pet), (6) putzen (clean), (7) kritisieren (criticise), (8) abbrechen (abort), (9) schreiben (write), (10) rückwärts zu spielen (play backwards), (11) verkaufen (sell), (12) räumen (clear)
- d. \$MATRIXPREDICATEA  
 (1) vorhaben (plan), (2) erwägen (consider), (3) verabsäumen (fail), (4) verlautbaren (announce), (5) anfangen (begin), (6) versprechen (promise), (7) wagen (dare), (8) erzwingen (force), (9) im Sinn haben (have in mind), (10) probieren (try), (11) in Erwägung ziehen (take into consideration), (12) veranlassen (order)
- e. \$MATRIXPREDICATEB  
 (1) langweilen (bore), (2) Problem bereiten (cause problems), (3) verärgern (annoy), (4) belasten (burden), (5) erfreuen (delight), (6) entzückt (delighted), (7) das Amt kosten (cost his office), (8) empört (appall), (9) Zeit kosten (cost time), (10) anstrengen (exhaust), (11) Mühe machen (make an effort), (12) Schwierigkeiten machen (cause problems)

## B.6 Experiment 6

- (13)
  - a. Welche/n \$NOUN1 hat denn DET \$NOUN2 zu \$VERB  
 which \$NOUN1 has PRT the \$NOUN2 to \$VERB  
 \$MATRIXPREDICATEA?  
 \$MATRIXPREDICATEA
  - b. Welche/n \$NOUN1 \$MATRIXPREDICATEA denn DET \$NOUN2 zu  
 which \$NOUN1 \$MATRIXPREDICATEA PRT the \$NOUN2 to  
 \$VERB?  
 \$VERB
  - c. Welche/n \$NOUN1 hat denn DET \$NOUN2 zu \$VERB  
 which \$NOUN1 has PRT the \$NOUN2 to \$VERB  
 \$MATRIXPREDICATEB?  
 \$MATRIXPREDICATEB
  - d. Welche/n \$NOUN1 \$MATRIXPREDICATEB denn DET \$NOUN2 zu  
 which \$NOUN1 \$MATRIXPREDICATEB PRT the \$NOUN2 to  
 \$VERB?  
 \$VERB
- (14) **Lexicalizations**
  - a. \$NOUN1

(1) Sonate (sonata), (2) Arbeit (paper), (3) Patient (patient), (4) Schauspieler (actor), (5) Esel (donkey), (6) Zimmer (room), (7) Projekt (project), (8) Artikel (article), (9) Lied (song), (10) Bischof (bishop), (11) Rotwein (red wine), (12) Patienten (patient)

b. \$NOUN2

(1) Pianist (pianist), (2) Studentin (student.fem), (3) Praktikant (intern), (4) Regisseur (director), (5) Kind (child), (6) Mann (man), (7) Architekt (architect), (8) Journalistin (journalist.fem), (9) Tante (aunt), (10) Priester (priest), (11) Weinkennerin (wine enthusiast.fem), (12) Praktikantin (intern.fem)

c. \$VERB

(1) spielen (play), (2) schreiben (write), (3) behandeln (treat), (4) unterstützen (support), (5) streicheln (pet), (6) putzen (clean), (7) beenden (end), (8) schreiben (write), (9) belustigen (amuse), (10) kritisieren (criticise), (11) verkosten (taste), (12) helfen (help)

d. \$MATRIXPREDICATEA

(1) forden (challenge), (2) langweilen (bore), (3) verärgern (annoy), (4) belasten (burden), (5) erfreuen (delight), (6) entzückt (charme), (7) empören (appall), (8) interessieren (interest), (9) belustigen (amuse), (10) erleichtern (unburden), (11) beglücken (satisfy), (12) bereichern (enrich)

e. \$MATRIXPREDICATEA

(1) forden (demand), (2) planen (plan), (3) verabsäumen (fail), (4) verlautbaren (announce), (5) beginnen (begin), (6) versprechen (promise), (7) erzwingen (force), (8) erwägen (consider), (9) hoffen (hope), (10) wagen (dare), (11) entscheiden (decide), (12) probieren (try)

## B.7 Experiment 7

- (15) a. DET \$NOUN1 zu \$VERB \$MATRIXPREDICATEA DET \$NOUN2  
the \$NOUN1 to \$VERB \$MATRIXPREDICATEA the \$NOUN2  
PRT.  
PRT
- b. Welche/n \$NOUN1 \$MATRIXPREDICATEA denn zu \$VERB die  
which \$NOUN1 \$MATRIXPREDICATEA PRT to \$VERB the  
\$NOUN2 PRT?  
\$NOUN2 PRT
- c. DET \$NOUN1 zu \$VERB \$MATRIXPREDICATEB DET Studentin.  
the \$NOUN1 to \$VERB \$MATRIXPREDICATEB the \$NOUN2

- d. Welche/n \$NOUN1 \$MATRIXPREDICATEB denn zu \$VERB DET  
 which \$NOUN1 \$MATRIXPREDICATEB PRT to \$VERB the  
 \$NOUN2?  
 \$NOUN2
- a. \$NOUN1  
 (1) Lied (song), (2) Arbeit (paper), (3) Zaun (fence), (4) Garten (garden),  
 (5) Dachstuhl (truss), (6) Christbaum (Christmas tree), (7) Brand (fire),  
 (8) Feld (field), (9) Schläger (racket), (10) Kasten (cupboard), (11) Kran  
 (crane), (12) Kühlschrank (fridge)
- b. \$NOUN2  
 (1) Musikerin (musician.fem), (2) Studentin (student.fem), (3) Heimwerk-  
 erin (home improver.fem), (4) Pensionistin (pensioner.fem), (5) Dachdecker  
 (roofer), (6) Onkel (uncle), (7) Feuerwehrmann (fire fighter), (8) Landwirten  
 (farmer.fem), (9) Tennisspielerin (tennis player.fem), (10) Mieter (tenant),  
 (11) Kranfhrer (crane operator), (12) Choleriker (choleric)
- c. \$VERB  
 (1) spielen (play), (2) schreiben (write), (3) streichen (paint), (4) pflegen  
 (take care of), (5) bauen (build), (6) schmücken (decorate), (7) löschen  
 (extinguish), (8) pflügen (write), (9) bespannen (string), (10) zertrümmern  
 (demolish), (11) lenken (manoeuvre), (12) einschlagen (smash)
- d. \$MATRIXPREDICATEA  
 (1) anstrengen (exhaust), (2) aufregen (annoy), (3) schwerfallen (is difficult),  
 (4) anregen (encourage), (5) auslaugen (wear out), (6) ausbauen (extend),  
 (7) mitnehmen (exhaust), (8) aufheitern (cheer up), (9) ablenken (distract),  
 (10) aufwühlen (stir up), (11) zusetzen (badger), (12) nachhängen (dwell on)
- e. \$MATRIXPREDICATEB  
 (1) belasten (burden), (2) verärgern (annoy), (3) missfallen (displease), (4)  
 motivieren (motivate), (5) ermüden (exhaust), (6) liegen (suit), (7) er-  
 schöpfen (wear down), (8) erfreuen (please), (9) stören (bother), (10) en-  
 tkräften (debilitate), (11) verunsichern (unsettle), (12) schaden (harm)

## B.8 Experiment 8

### (16) Template

- a. John wondered whether a book about Obama had created a scandal  
 last year.
- b. John wondered about which politician a book had created a scandal  
 last year.

- c. John wondered which politician a book about had created a scandal last year.
- d. John wondered whether Mary had read a book about Obama last year.
- e. John wondered which politician Mary had read a book about last year.
- f. John wondered about which politician Mary had read a book last year.

(17) **Lexicalizations** (for all conditions according to template)

- 1 Anne speculated whether a magazine about {gardening, which topic} had helped the readers yesterday.
- 2 Tom wondered whether a documentary about {poverty, which issue} had motivated the viewers last week.
- 3 Monica wondered whether a presentation about {psychology, which subject} had informed the audience on Tuesday.
- 4 Bob wondered whether a musical about {cats, which animal} had gotten good reviews last year.
- 5 Kate wondered whether a novel about {Catholics, which religion} had caused a scandal last month.
- 6 Nick wondered whether a song about {love, which emotion} had inspired the listeners this morning.
- 7 Phil speculated whether a documentary about {healthcare, which topic} had swayed the voters last year.
- 8 Zach wondered whether a TV show about {sharks, which animal} had excited the viewers yesterday.
- 9 Alex wondered whether a class about {global warming, which problem} had inspired the students last semester.
- 10 Danielle inquired whether a press release about {Palestine, which country} had cleared up the controversy last week.
- 11 Hannah wondered whether an essay about {education, which question} had impressed the teacher today.
- 12 Bob speculated whether a protest about {democracy, which human right} had influenced the politicians on Monday.
- 13 Jack wondered whether a story about {tigers, which animal} had excited the readers yesterday.
- 14 John wondered whether a song about {love, which feeling} had caused a revolution last night.
- 15 Craig wondered whether a race for {cancer, which disease} had been a success last year.
- 16 Mark inquired whether a story about {Clifford, which dog} had caused an uproar last week.
- 17 Brandon wondered whether a radio program about {sex, which theme} had offended Conservatives last night.
- 18 Julia wondered whether a dissertation about {the Cold War, which war} had brought new insight last winter.

## B.9 Experiment 9

### (18) Template

- a. A book about Obama caused a scandal.
- b. Which politician did a book about cause a scandal?
- c. John believed a book about Obama to have caused a scandal.
- d. Which politician did John believe a book about to have caused a scandal?

### (19) Lexicalizations (for all conditions according to template)

- 1 Chris believed a movie about {capitalism, which subject} to have caused controversy.
- 2 Michael believed a TV show about {doctors, which topic} to have entertained the viewers.
- 3 Nick believed a class about {American history, which field} to have challenged the students.
- 4 Ryan believed a book about {Christmas, which holiday} to have captivated the children.
- 5 Kim believed a poem about {Paris, which city} to have delighted the teachers.
- 6 Steven believed a play about {WWII, which war} to have shocked the audience.
- 7 Kurt believed a magazine about {movie stars, which celebrities} to have bored the readers.
- 8 Kurt believed a seminar about {crime, which topic} to have created a strong response.
- 9 Janet believed a report about {Iran, which country} to have fooled the investigators.
- 10 Celine believed a song about {love, which emotion} to have excited the listeners.
- 11 Paul believed an article about {drugs, which issue} to have angered people.
- 12 Tim believed a novel about {Mormons, which religion} to have caused a scandal.

## B.10 Experiment 10

### (20) Template

- a. John wondered which man a book about caused a scandal last year.
- b. John wondered whether a book about Obama caused a scandal last year.
- c. John wondered which man a book about was released last year.
- d. John wondered whether a book about Obama was released last year.



(21) **Lexicalizations** (for all conditions according to template)

- 1 Steve wondered whether a TV show about {Sports, which topic} had {excited people, been aired} last night.
- 2 Mary speculated whether a website about {Obama, which politician} had {spread rumors, been launched} last week.
- 3 Lucy inquired whether a movie about {lions, which animal} had {attracted audiences, been released} last month.
- 4 Mike wondered whether a book about {George Bush, which man} had {caused a scandal, been written} last year.
- 5 Anne speculated whether an article about {Tom Cruise, which actor} had {angered people, been published} on Monday.
- 6 Joe inquired whether a documentary about {Sudan, which country} had {sparked a revolution, been made} last week.
- 7 Sue wondered whether a song about {Marilyn Monroe, which woman} had {interested people, been performed} today.
- 8 Robert speculated whether a story about {Peter Pan, which character} had {gained notoriety, been read} last week.
- 9 Jane inquired whether a magazine about {health, which subject} had {intrigued readers, been mailed} on Tuesday.
- 10 John wondered whether a lecture about {evolution, which theory} had {fascinated people, been given} last semester.
- 11 Kate speculated whether a class about {genocide, which issue} had {caused a controversy, been offered} last week.
- 12 Keith wondered whether a presentation about {World War II, which topic} had {caused excitement, been delivered} this morning.

## B.11 Experiment 11

(22) **Template**

- a. A different chapter of the textbook seems to have been assigned to John.
- b. A different chapter of the textbook seems to have been assigned to every student.
- c. That's the book that a different chapter of seems to have been assigned to John.
- d. That's the book that a different chapter of seems to have been assigned to every student.
- e. That's the book that John seems to have assigned a different chapter of to every student.

(23) **Lexicalizations** (for all conditions according to template)

- 1 A different chapter of the textbook seems to have been assigned to {John, every student}.

- 2 A different section of the manuscript seems to have been handed out to {every reviewer, Mary}.
- 3 A different clip of the movie seems to have been shown to {Bill, every member of the Academy}.
- 4 A different episode of the TV show seems to have been devoted to {Einstein, every Nobel Price laureate}.
- 5 A different excerpt of the radio program seems to have been presented to {Linda, every critic}.
- 6 A different part in the play seems to have been written for {Chris, every actor}.
- 7 A different novel about {Baltimore, the city} seems to have been sold to {Anna, every publisher}.
- 8 A different lecture about global warming seems to have been given to {Michael, every CEO}.
- 9 A different passage of the story seems to have been read to {Carol, every child}.
- 10 A different ad for a medication seems to have been emailed to {Jason, every employee}.
- 11 A different report about the city budget seems to have been mailed to {Susan, every council member}.
- 12 A different parking spot in {lot 1, the lot} seems to have been allocated to {Bob, every resident}.
- 13 A different line of the poem seems to have been dedicated to {Barbara, every president}.
- 14 A different coupon for {a free soda, the item} seems to have been offered to {Tim, every customer}.
- 15 A different travel guide about {Austria, the country} seems to have been recommended to {Jennifer, every tourist}.

## B.12 Experiment 12

### (24) Template

- a. sono \$NOUN1-wa \$NP2-ga \$NP3-o \$VERB1 koto-ga  
the \$NOUN1-Top \$NP2-Nom \$NP3-Acc \$VERB1 fact-Nom  
\$PREDICATE1 to \$VERB2  
\$PREDICATE1 Comp \$VERB2
- b. \$NP3-o sono \$NOUN1-wa \$NP2-ga \$VERB1 koto-ga  
\$NP3-Acc the \$NOUN1-Top \$NP2-Nom \$VERB1 fact-Nom  
\$PREDICATE1 to \$VERB2  
\$PREDICATE1 Comp \$VERB2
- c. sono \$NOUN1-wa \$NP2-ga \$NP3-o \$VERB1 koto-o  
the \$NOUN1-Top \$NP2-Nom \$NP3-Acc \$VERB1 fact-Acc  
\$PREDICATE2 to \$VERB2  
\$PREDICATE2 Comp \$VERB2

- d. \$NP3-o sono \$NOUN1-wa \$NP2-ga \$VERB1 koto-o  
\$NP3-Acc the \$NOUN1-Top \$NP2-Nom \$VERB1 fact-Acc  
\$PREDICATE2 to \$VERB2  
\$PREDICATE2 Comp \$VERB2
- e. sono \$NOUN1-ga \$NP2-ga \$VERB1 koto-ga \$PREDICATE1  
the \$NOUN1-Nom \$NP2-Nom \$VERB1 fact-Nom \$PREDICATE1  
to \$VERB2 no-wa \$NP3 da  
Comp \$VERB2 NL-Top \$NP3 cop
- f. sono \$NOUN1-ga \$NP2-ga \$VERB1 koto-o \$PREDICATE1  
the \$NOUN1-Nom \$NP2-Nom \$VERB1 fact-Acc \$PREDICATE1  
to \$VERB2 no-wa \$NP3 da  
Comp \$VERB2 NL-Top \$NP3 cop

(25) **Lexicalizations**

- a. \$NOUN1  
(1) kooti (coach), (2) kantoku (director), (3) saibankan (judge), (4) sakka (writer), (5) butyoo (manager), (6) syouzyo (girl), (7) yakuin (executive), (8) kankyaku (audience), (9) hahaoya (mother), (10) sakkyo-kuka (composer), (11) kyouzyu (professor), (12) kangohutyuu (chief nurse), (13) syatyou (president), (14) zyaanarisuto (journalist), (15) kityou (captain), (16) kannusi (priest), (17) sigikaigiin (city council member), (18) resutoran-no tentyou (restaurant owner)
- b. \$NP2  
(1) mumei-no rikuzyou sensyu (nameless track-and-field athlete), (2) oomono hyouronka (bigwig critic), (3) torakkuno untensyu (truck driver), (4) nekkyoutekina stookaa (fanatical stalker), (5) yuusyuuuna syain (competent employee), (6) iziwaruna ane (mean older sister), (7) hiroti-no buka (one of his men), (8) hawaizin-no myuuzisyan (Hawaiian musician), (9) ukkarimono-no musuko (forgetful son), (10) ninki kasyu (popular singer), (11) zyosyu (assistant), (12) isya (doctor), (13) iziwaruna senmu (mean senior director), (14) gakusei borantia (student volunteer), (15) sutyuwaadesu (cabin crew), (16) miko (shrine maiden), (17) hisyo (secretary), (18) syehu (chef)
- c. \$NP3  
(1) 100m-no kiroku (record in 100 meters), (2) syuen haiyuu (main actor), (3) humikiri-no syadanki (railway crossing gate), (4) kyohaku-no tegami (threatening letter), (5) kaigaide-no ninmu (duty abroad), (6) kuma-no nuigurumi (teddy bear), (7) keieizyou-no himitu (secret management information), (8) nihonsei-no ukurere (Japanese ukulele), (9) uraguti-no doa (back door), (10) hazimete-no zenkoku tuaa (first national tour), (11) zikken deeta (experimental data), (12) nyuugan

kensin (breast cancer examination), (13) sinnyuu syain (new employee), (14) ahurika-de-no iryou enzyo (medical aid in Africa), (15) gaikokuzin-no zyoukyaku (foreign passenger), (16) keidai-no souzi (cleaning of the precinct), (17) yuunouna sityou (competent mayor), (18) tyuubou-no nezumi kuzyo (extermination of the rats in the kitchen)

d. \$VERB1

gwig (1) nurikaeta (renewed), (2) kokuhyoucita (harshly criticized), (3) hakai-sita (destroyed), (4) kaita (wrote), (5) kanryousita (completed), (6) suteta (dumped), (7) nigitteiru (hold), (8) hiita (played), (9) akeppana-sinni sita (left open), (10) tyuudansita (suspended), (11) kaizansita (falsified), (12) orosokani sita (did carelessly), (13) haku-gaisita (persecuted), (14) sasaeteita (was supporting), (15) naigasiro-ni sita (ignored), (16) namaketa (neglected), (17) kokuhatusita (accused), (18) okotatta (neglected)

e. \$PREDICATE1

(1) marukomi-o sawagaseta (caused sensation among the media), (2) kougyou seiseki-no husin-ni tunagatta (led to sluggish box office results), (3) daiziko-o hikiokosita (caused a big accident), (4) rensai-no utikiri-o unagasita (accelerate the novel series to the end), (5) kaigai zigyou-o hatten saseta (expanded their overseas business), (6) kenka-no genin da (is the cause of the fight), (7) kaisya-no sonzoku-o obiyakasita (menaced the continuation of the company), (8) konsaato-no medama-ni natta (became the main event of the concert), (9) akisu higai-o maneita (caused the loss by theft), (10) fan-o situbou saseta (disappointed the fans), (11) kenkyuusitu-no hyouban-o sageta (degraded the reputation of the research lab), (12) kanzya-no byouzyou-o akka saseta (made the patient's condition worse), (13) syokuba-no huniki-o gikotinaku saseta (made the atmosphere in the office awkward), (14) kokuren hakenin-o kansin saseta (impressed the UN delegate), (15) koukuugaisya-no ninki-o teimei saseta (lowered the popularity of the airline), (16) hatumoodo kyaku-o okorasete simatta (ended up upsetting the new year visitors), (17) simin-o odorokaseta (surprised the citizens), (18) mise-no hyouban-o dainasi-ni sita (ruined the reputation of the store)

f. \$PREDICATE2

(1) zimansita (bragged about), (2) koukaisiteiru (is regretting), (3) kakusiteita (was hiding), (4) zihakusita (confessed), (5) yorokondeita (was happy about), (6) naysyo-ni siteita (kept as a secret), (7) bakuro-sita (revealed), (8) hokotteita (was proud about), (9) wasureteiru (has forgotten), (10) wasurerarezuni iru (still cannot forget), (11) impeisiteita (has concealed), (12) mitometeiru (admit), (13) hiteisita (denied), (14) kokuhakusita (confessed), (15) kuyandeiru (is regretting), (16) mou-

seisiteiru (repented), (17) kouhyousiteiru (has made public), (18) koku-hakusita (confessed)

- g. \$VERB2  
 (1) kangaeta (thought), (2) suisokusita (guessed), (3) syutyousita (argued), (4) hanasita (talked), (5) komentosita (commented), (6) utaeta (claimed), (7) sinzikondeita (believed), (8) katatta (told), (9) kizuita (noticed), (10) suisokusita (guessed), (11) omotta (thought), (12) syougensita (testified), (13) hanasiteita (was talking), (14) houdousita (reported), (15) hanasita (talked), (16) omoikondeita (falsely believed), (17) setumeisita (explained), (18) kanasinda (grieved)

## B.13 Experiment 13

### Left Branch Extraction

#### (26) Template

- a. Čiji su \$ADJUNCT \$NOUN1 \$VERB \$NOUN2  
 whose aux \$ADJUNCT \$NOUN1 \$VERB \$NOUN2
- b. Čiji \$NOUN1 su \$ADJUNCT \$VERB \$NOUN2  
 whose \$NOUN1 aux \$ADJUNCT \$VERB \$NOUN2
- c. Čije su \$ADJUNCT \$NOUN1 \$VERB \$NOUN2  
 whose aux \$ADJUNCT \$NOUN1 \$VERB \$NOUN2
- d. Čije \$NOUN2 su \$ADJUNCT \$NOUN1 \$VERB  
 whose \$NOUN2 aux \$ADJUNCT \$NOUN1 \$VERB

#### (27) Lexicalizations

- a. \$NOUN1  
 (1) prijatelji (friends), (2) roditelji (parents), (3) kolege (colleagues), (4) poznanici (acquaintances), (5) čuvari (guards), (6) drugarice (female friends), (7) profesori (professors), (8) učenici (pupils), (9) studenti (students), (10) lekari (doctors), (11) rođaci (cousins), (12) gazde (landlords)
- b. \$NOUN2  
 (1) komšije (neighbours), (2) drugari (friends), (3) plesači (dancers), (4) partneri (partners), (5) sportisti (athletes), (6) vozači (drivers), (7) muzičari (musicians), (8) nastavnici (teachers), (9) učitelji (teachers), (10) instruktori (instructors), (11) dečaci (boys), (12) devojčice (girls)
- c. \$ADJUNCT  
 (1) prošle godine (last year), (2) prošlog meseca (last month), (3) prošle nedelje (last week), (4) prošlog oktobra (last October), (5) prošlog

ponedeljka (last Monday), (6) prošlog utorka (last Tuesday), (7) prošle srede (last Wednesday), (8) prošlog četvrtka (last Thursday), (9) prošlog petka (last Friday), (10) prošle subote (last Saturday), (11) prošle nedelje (last Sunday), (12) prošlog leta (last summer)

- d. \$VERB  
 (1) upoznati (meet), (2) bodriti (support), (3) gledati (watch/observe),  
 (4) prevariti (cheat), (5) udariti (hit), (6) poljubiti (kiss), (7) podučavati (teach), (8) začikavati (tease), (9) nacrtati (draw), (10) slagati (lie),  
 (11) zagrliti (hug), (12) prepoznati (recognize)

## PP-Extraction

### (28) Template

- a. O kome/čemu je \$ADJUNCT taj/onaj \$NOUN1 \$VERB  
 about whom/what aux \$ADJUNCT this/that \$NOUN1 \$VERB  
 \$NOUN2?  
 \$NOUN2
- b. taj/onaj \$NOUN1 je \$ADJUNCT \$VERB \$NOUN2  
 this/that \$NOUN1 aux \$ADJUNCT \$VERB \$NOUN2
- c. O kome/čemu je \$ADJUNCT \$NOUN1 \$VERB \$NOUN2?  
 about whom/what aux \$ADJUNCT \$NOUN1 \$VERB \$NOUN2
- d. \$NOUN1 je \$ADJUNCT \$VERB \$NOUN2  
 this/that \$NOUN1 aux \$ADJUNCT \$VERB \$NOUN2

### (29) Lexicalizations

- a. \$NOUN1  
 knjiga o Marku (book about Marko), političar (politician), predavanje o komunizmu (lecture about communism), student (student), reklama o nekretninama (advertisement about estate), snimatelj (cameraman), govor o stipendiranju (speech about stipend), dekan (dean), istraživanje o medijima (research about media), naučnik (scientist), priča o Jovani (story about Jovan), devojka (girl), predstava o Aleksandru (play about Alexandar), koreograf (choreographer), mit o prosperitetu (myth about prosperity), pisac (writer), šala o Peri (joke about Peter), devojčica (girl), pesma o Žarku (song about Zarko), pevač (singer), film o kriminalu (movie about criminal), momak (guy), članak o adolescentima (article about adolescents), psiholog (psychologist)
- b. \$NOUN2  
 burne polemike (heated debate), knjiga o Marku (book about Marko), neredi (riot), predavanje o komunizmu (lecture about communism), reakcija (reaction), reklama o nekretninama (advertisement about estate), situacija (situation), govor o stipendiranju (speech about stipend), re-

volt (revolt), istraživanje o medijima (research about media), odnos (relation), priča o Jovani (story about Jovana), problemi (problems), predstava o Aleksandru (play about Alexandar), promene (changes), mit o prosperitetu (myth about prosperity), napetost (tension), šala o Peri (joke about Peter), pometnja (confusion), pesma o Žarku (pesma about Zarko), pobuna (rebel), film o kriminalu (movie about criminal), brojne kritike (numerous criticisms), članak o adolescentima (article about adolescents)

c. \$ADJUNCT

prošle godine (last year), prošlog meseca (last month), prošle nedelje (last Sunday), prošlog oktobra (last October), prošlog ponedeljka (last Monday), prošlog utorka (last Tuesday), prošle srede (last Wednesday), prošlog četvrtka (last Thursday), prošlog petka (last Friday), prošle subote (last Saturday), prošle nedelje (last Sunday), prošlog leta (last summer)

d. \$VERB

izazvati (evoke), pročitati (read), zabeležiti (write down), snimiti (shoot), olakšati (make easier), održati (hold), uraditi (do), zakomplikovati (complicate), ispričati (tell), napraviti (cause), postaviti (put on stage), doneti (bring), smanjiti (shrink), napraviti (make), pevati (sing), iznajmiti (rent), napisati (write)

## Bibliography

- Abels, Klaus. 2003. Successive cyclicity, anti-locality and adposition stranding. Doctoral Dissertation, University of Connecticut.
- Abels, Klaus, and Ad Neeleman. 2009. Universal 20 without the LCA. In *Merging features: computation, interpretation, acquisition.*, ed. J.M Brucart, A. Gavarro, and J. Sola. Oxford University Press.
- Aoun, Joseph, and Dominique Sportiche. 1983. On the formal theory of government. *The Linguistic Review* 2:211–236.
- Baker, Marc C. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: The University of Chicago Press.
- Bard, Ellen Gurman, Dan Robertson, and Antonella Sorace. 1996. Magnitude estimation of linguistic acceptability. *Language* 72:32–68.
- Bašić, Monika. 2004. Nominal subextractions and the structure of NPs in Serbian and English. Master's thesis, University of Tromsø, Norway.
- Bayer, Josef, Markus Bader, and Michael Meng. 2001. Morphological underspecification meets oblique case: Syntactic and processing effects in German. *Lingua* 111:465–514.
- Behagel, Otto. 1923. *Deutsche Syntax. Band I.-IV.* Heidelberg.
- den Besten, Hans. 1977/1983. On the interaction of root transformations and lexical deletive rules. In *On the formal syntax of the Westgermania*, ed. W. Abraham. Amsterdam: John Benjamins.
- den Besten, Hans. 1985. The ergative hypothesis and free word order in Dutch and German. In *Studies in German grammar*, ed. Jindrich Toman, 23–64. Dordrecht: Foris.
- Bobaljik, Jonathan, and Dianne Jonas. 1996. Subject positions and the rules of TP. *Linguistic Inquiry* 27.2:195–236.
- Bošković, Željko. 2005. On the locality of left branch extraction and the structure of NP. *Studia Linguistica* 59(1):1–45.
- Broekhuis, Hans. 2005. Extraction from subjects: Some remarks on Chomsky's On phases. In *Organizing grammar. Linguistic studies in honor of Henk van Riemsdijk*, ed. Hans Broekhuis et al., 59–68. Berlin/ New York: Mouton de Gruyter.
- Burge, Tyler. 1973. Reference and proper names. *Journal of Philosophy* 70:425–429.



- Büring, Daniel, and Katharina Hartmann. 1997. Doing the right thing. *The Linguistic Review* 14:1–42.
- Burzio, Luigi. 1981. Intransitive verbs and Italian auxiliaries. Doctoral Dissertation, Massachusetts Institute of Technology.
- Cattell, Ray. 1976. Constraints on movement rules. *Language* 52:18–50.
- Ćavar, Damir, and Gisbert Fanselow. 2002. Distributed deletion. In *Theoretical approaches to universals*, ed. A. Alexiadou. Amsterdam: John Benjamins.
- Chomsky, Noam. 1957. *Syntactic structures*. The Hague: Mouton.
- Chomsky, Noam. 1965. *Aspects of the theory of syntax*. Cambridge, Mass: MIT Press.
- Chomsky, Noam. 1973. Conditions on transformations. In *A festschrift for Morris Halle*, ed. S. Anderson and P. Kiparsky, 232–286. New York: Holt, Rinehart & Wilson.
- Chomsky, Noam. 1975. *Reflections on language*. New York: Pantheon.
- Chomsky, Noam. 1980. On binding. *Linguistic Inquiry* 11:1–46.
- Chomsky, Noam. 1981. *Lectures on government and binding: The Pisa lectures*. Mouton de Gruyter.
- Chomsky, Noam. 1986. *Barriers*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2000. Minimalist inquiries. In *Step by Step: Essays on minimalist syntax in honor of Howard Lasnik*, ed. R. Martin, D. Michaels, and J. Uriagereka, 89–151. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2008. On phases. In *Foundational issues in linguistic theory: Essays in honor of Jean-Roger Vergnaud.*, ed. R. Freidin, C. Otero, and M.-L. Zubizarreta. Cambridge, Mass.: MIT Press.
- Cinque, Guglielmo. 1990. *Types of A'-dependencies*. Cambridge, Mass.: MIT Press.
- Corver, Norbert. 1991. The internal syntax and movement behavior of the Dutch 'wat voor'-construction. *Linguistische Berichte* 133:190–228.
- Corver, Norbert. 1992. Left branch extraction. In *Proceedings of NELS*, 6784.
- Corver, Norbert. 2006. Freezing effects. In *The Blackwell Companion to Syntax (Volume II)*, ed. M. Everaert and H. van Riemsdijk, 383–406. Malden, MA: Backwell.

- Culbertson, Jennifer, and Steven Gross. 2009. Are linguists better subjects? *The British journal for the philosophy of science* 60:721–736.
- Diesing, Molly. 1990. The syntactic roots of semantic partition. Doctoral Dissertation, University of Massachusetts, Amherst, Ma.
- Diesing, Molly. 1992. *Indefinites*. Cambridge, Mass.: MIT Press.
- den Dikken, Marcel, Judy Bernstein, Christina Tortora, and Raffaella Zanuttini. 2007. Data and grammar: Means and individuals. *Theoretical Linguistics* 33(3):335–352.
- Drummond, Alex. 2009. The unity of extraposition and the A/A-bar distinction. In *Proceedings of the 45th Annual Meeting of the Chicago Linguistics Society*.
- Ernst, Thomas. 1984. Towards an integrated theory of adverb positions in English. Doctoral Dissertation, University of Indiana, Bloomington.
- Fanselow, Gisbert, Matthias Schlesewsky, and Ralf Vogel. 2008. Animacy effects on crossing wh-movement in German. Unpublished manuscript, Universität Potsdam.
- Featherston, Sam. 2002. Coreferential objects in German: Experimental evidence on reflexivity. *Linguistische Berichte* 192:457–484.
- Featherston, Sam. 2005a. Magnitude estimation and what it can do for your syntax: Some wh-constraints in German. *Lingua* 115:1525–1550.
- Featherston, Sam. 2005b. *That*-trace in German. *Lingua* 115:1277–1302.
- Featherston, Sam. 2007. Data in generative grammar: The stick and the carrot. *Theoretical Linguistics* 33.3:269–318.
- Featherston, Sam. to appear. Relax, lean back, and be a linguist. *Zeitschrift für Sprachwissenschaft zum Thema 'Daten in der Sprachwissenschaft'*.
- Fox, Danny. 1995. Economy and scope. *Natural Language Semantics* 3:283–341.
- Fujii, Tomohiro. 2006. Some theoretical issues in Japanese control. Doctoral Dissertation, University of Maryland, College Park, Md.
- Fukui, Naoki, and Yuji Takano. 1998. Symmetry in Syntax: Merge and Demerge. *Journal of East Asian Linguistics* 7:27–86.
- Gibson, Edward. 1998. Linguistic complexity: locality of syntactic dependencies. *Cognition* 68:1–76.
- Gibson, Edward, Neil Pearlmutter, Enriqueta Canseco-Gonzalez, and Gregory Hickok. 1996. Recency preference in the human sentence processing mechanism. *Cognition* 59:2359.

- Goldberg, Adele. 2006. *Constructions at work*. Oxford University Press.
- Goodall, Grant, Shinichiro Fukuda, Dan Michel, and Henry Beecher. 2010. Comparing three methods for sentence judgment experiments. Presentation at LSA Annual Meeting, Baltimore, Md.
- Grewendorf, Günther. 1988. *Aspekte der Deutschen Syntax. Eine Rektions-Bindungs-Analyse*. Tübingen: Narr.
- Grewendorf, Günther. 1989. *Ergativity in German*. Dordrecht: Foris.
- Grewendorf, Günther. 2002. *Minimalistische Syntax*. A. Francke Verlag Tübingen und Basel: UTB für Wissenschaft.
- Haider, Hubert. 1983. Connectedness effects in German. *Groninger Arbeiten zur Germanistischen Linguistik* 25:83–117.
- Haider, Hubert. 1993. *Deutsche Syntax-generativ*. Tübingen: Narr.
- Haider, Hubert. 2009. Linguistics - postmodern frippery or primordial cognitive science. Presentation at the "Visions for Linguistics" workshop, Univ. Konstanz, Schloss Freudental.
- Hankamer, Jorge, and Vera Lee-Schoenfeld. 2005. What moves in German VP-fronting? Handout of presentation at Berkeley Syntax/Semantics Circle.
- Höhle, Tilman. 1982. Explikationen für 'normale Betonung' und 'normale Wortstellung'. In *Satzglieder im Deutschen. Vorschläge zur syntaktischen, semantischen und pragmatischen Fundierung.*, ed. W. Abraham. Tübingen: Narr.
- de Hoop, Helen. 1996. *Case configuration and noun phrase interpretation*. Routledge.
- Hornstein, Norbert, and Jairo Nunes. 2002. On asymmetries between Parasitic Gap and Across-the-Board constructions. *Syntax* 5:1:26–54.
- Huang, Jim. 1982. Logical relations in chinese and the theory of grammar. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, Mass.
- Hunter, Tim. 2010. The syntax and semantics of movement and adjunction in natural language. Doctoral Dissertation, University of Maryland, College Park, Md.
- Ishii, Toru. 1997. An asymmetry in the composition of phrase structure and its consequences. Doctoral Dissertation, University of California, Irvine.
- Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, Mass.: MIT Press.

- Keller, Frank. 2000. Gradience in grammar: Experimental and computational aspects of degree of grammaticality. Doctoral Dissertation, University of Edinburgh.
- Kikuchi, Akira. 1987. Comparative deletion in Japanese. Unpublished manuscript, Yamagata University.
- Kitagawa, Yoshihisa. 1986. Subjects in Japanese and English. Doctoral Dissertation, University of Massachusetts, Amherst, Ma.
- Koopman, Hilda, and Dominique Sportiche. 1985. Theta theory and extraction. Abstract in GLOW Newsletter 14.
- Koopman, Hilda, and Dominique Sportiche. 1991. The position of subjects. *Lingua* 85:211–258.
- Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase structure and the lexicon*, ed. J. Rooryck and L. Zaring, 109–137. Dordrecht, Kluwer.
- Kravtchenko, Ekaterina, Maria Polinsky, and Ming Xiang. 2009. Are all subject islands created equal? Poster presented at CUNY 2009.
- Larson, Richard K. 1988. On the double object construction. *Linguistic Inquiry* 19:335–391.
- Lasnik, Howard, and Mamuro Saito. 1991. On the subject of infinitives. In *Papers from the 27th Regional Meeting of the Chicago Linguistic Society*, ed. L. Dobrin, L. Nichols, and R. Rodriguez, 324–343.
- Lasnik, Howard, and Mamuro Saito. 1992. *Move Alpha: Conditions on its application and output*. Cambridge, Mass.: MIT Press.
- Lenerz, Jürgen. 1977. *Zur Abfolge nominaler Satzglieder im Deutschen*. Tübingen: Niemeyer.
- Leu, Thomas. 2008. 'What for' internally. *Syntax* 11.1:1–25.
- Levine, Robert, and Ivan A Sag. 2003. Some empirical issues in the grammar of extraction. *Proceedings of the HPSG03 conference*.
- Lidz, Jeff, and Alexander Williams. 2009. Constructions on holiday. *Cognitive Linguistics* 20-1:177–189.
- Longobardi, Giuseppe. 1994. Reference and proper names. *Linguistic Inquiry* 25:609–65.
- Lutz, Ulrich. 2001. Studien zu Extraktion und Projektion im Deutschen. Doctoral Dissertation, Universität Tübingen.

- Marantz, Alex. 1984. *On the nature of grammatical relations*. Cambridge MA: MIT Press.
- McCloskey, Jim. 1997. Subjecthood and subject positions. In *Elements of Grammar*, ed. Liliane Haegeman, 197–235. Dordrecht: Kluwer.
- Melchior, Maria. 2007. What-for-splits and the analysis of dative objects in German. Slides of the talk at Workshop on Object Positions, January 18-19, 2007. Aarhus Universitet, Aarhus, Denmark.
- Müller, Gereon. 1995. *A-bar Syntax*. Berlin: Mouton de Gruyter.
- Müller, Gereon. 1999. Optimality, markedness, and word order in German. *Linguistics* 37:777–818.
- Müller, Gereon. 2004. Verb-second as vP-first. *Journal of Comparative Germanic Linguistics* 7:179–234.
- Müller, Gereon. 2010. On deriving CED effects from the PIC. *Linguistic Inquiry* 41(1):35–82.
- Murphy, Brian, and Carl Vogel. 2008. An empirical comparison of measurement scales for judgements of acceptability. Poster presented at the Linguistic Evidence Conference 2008, Tübingen.
- Nunes, Jairo. 2001. Sideward Movement. *Linguistic Inquiry* 32:2:303–344.
- Nunes, Jairo. 2004. *Linearization of chains and sideward movement*. Linguistic Inquiry Monograph. MIT Press.
- Nunes, Jairo, and Juan Uriagereka. 2000. Cyclicity and extraction domains. *Syntax* 3:20–43.
- Pafel, Jürgen. 1996. Die syntaktische und semantische Struktur von was für-Phrasen. *Linguistische Berichte* 161:37–67.
- Pereltsvaig, Asya. 2006. LBE  $\neq$  E: Split phrases in colloquial Russian. Handout of presentation at FASL 15, University of Toronto.
- Pesetsky, David. 1987. Wh-in-situ: Movement and unselective binding. In *The representation of (In)definiteness*, ed. Eric Reuland Aliceter Meulen. Cambridge, Mass.: MIT Press.
- Phillips, Colin. 2009. Should we impeach armchair linguists? In *Japanese/Korean Linguistics 17*, ed. S. Iwasaki et al. CSLI Publications.
- Phillips, Colin, Matthew W. Wagers, and Ellen F. Lau. to appear. Grammatical illusions and selective fallibility in real time language comprehension. *Language & Linguistics Compass*.

- Pollock, Jean-Yves. 1989. Verb movement, Universal Grammar, and the structure of IP. *Linguistic Inquiry* 20.3:365–424.
- Reinhart, Tanya. 1981. Definite NP anaphora and c-command. *Linguistic Inquiry* 14:101–36.
- Reinhart, Tanya, and Eric Reuland. 1993. Reflexivity. *Linguistic Inquiry* 24:657–720.
- Richards, Marc. 2004. Object shift and scrambling in North and West Germanic: A case study in symmetrical syntax. Doctoral Dissertation, University of Cambridge.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar. Handbook of generative syntax*, 281–337. Kluwer, Dordrecht.
- Rohrbacher, Bernhard. 1994. Notes on the Antisymmetry of Syntax. In *University of Pennsylvania Working Papers in Linguistics*, volume 1, 111–128.
- Rosengren, Inger. 2002. EPP: A syntactic device in the service of semantics. *Studia Linguistica* 56(2):145–190.
- Ross, John R. 1967. Constraints on variables in syntax. Doctoral Dissertation, MIT.
- Ross, John R. 1974. Three batons for cognitive psychology. In *Cognition and the symbolic processes*, ed. W. B. Weimer and D. Palermo. Hillsdale, NJ: Lawrence Erlbaum.
- Sabel, Joachim. 1999. Das Passiv im Deutschen: Derivationale Ökonomie vs. Optionale Bewegung. *Linguistische Berichte* 177:87–112.
- Saito, Mamuro, and Naoki Fukui. 1998. Order in phrase structure and movement. *Linguistic Inquiry* 29.3:439–474.
- Sauerland, Uli, and Paul Elbourne. 2002. Total reconstruction, PF movement, and derivational order. *Linguistic Inquiry* 33.2:283–319.
- Schütze, Carson. 1996. *The empirical base of linguistics: Grammaticality judgments and linguistic methodology*. Chicago: The University of Chicago Press.
- Sheehan, Michelle. 2009. Complement stranding: a window on multiple spellout and the LCA. Presentation at GLOW 2009.
- Sorace, Antonella. 2000. Gradients in auxiliary selection with intransitive verbs. *Language* 76.4:859–890.
- Sportiche, Dominique. 1988. A theory of floating quantifiers and its corollaries for constituent structure. *Linguistic Inquiry* 19:425–499.

- Sprouse, Jon. 2007. A program for experimental syntax: Finding the relationship between acceptability and grammatical knowledge. Doctoral Dissertation, University of Maryland, College Park, Md.
- Stepanov, Arthur. 2001. Cyclic domains in syntactic theory. Doctoral Dissertation, University of Connecticut.
- Stepanov, Arthur. 2007. The end of the CED? Minimalism and extraction domains. *Syntax* 10:1:80–126.
- Sternefeld, Wolfgang. 1985. Deutsch ohne grammatische Funktionen: ein Beitrag zur Rektions-und Bindungstheorie. *Linguistische Berichte* 99:394–439.
- Svenonius, Peter. 2001. Subject positions and the placement of adverbials. In *Subjects, Expletives and the EPP*, ed. P. Svenonius. Oxford University Press, New York.
- Takahashi, Daiko. 1994. Minimality of movement. Doctoral Dissertation, University of Connecticut.
- Truswell, Robert. 2007. Extraction from adjuncts and the structure of events. *Lingua* 117:1355–1377.
- Uriagereka, Juan. 1999. Multiple spell-out. In *Working minimalism*, ed. S. Epstein and N. Hornstein, 251–282. MIT Press.
- Webelhuth, Gerd. 1989. *Syntactic saturation phenomena and the modern Germanic languages*. Universit of Massachusetts, GLSA.
- Wellwood, Alexis, Roumyana Pancheva, Valentine Hacquard, Scott Fults, and Colin Phillips. 2009. The role of event comparison in comparative illusions. Poster presented at CUNY 2009.
- Weskott, Thomas, and Gisbert Fanselow. 2008. Variance and informativity in different measures of linguistic acceptability. In *Proceedings of the 27th West Coast Conference on Formal Linguistics*, ed. Natasha Abner and Jason Bishop, 431–439.
- Wexler, Ken, and Peter Culicover. 1981. *Formal principles of language acquisition*. Cambridge, Mass.: MIT Press.
- Williams, Christopher John Fardo. 1985. Aristotle’s theory of descriptions. *Philosophical Review* 94(1):63–80.
- Williams, Edwin. 1981. Argument structure and morphology. *Linguistic Review* 1:81–114.
- Wurmbrand, Susanne. 2004. No TP-fronting meets Nearly Headless Nick. Unpublished manuscript, University of Connecticut.

- Wurmbrand, Susanne. 2006. Licensing case. *Journal of Germanic Linguistics* 18.3:175–236.
- Yoshida, Masaya. 2006. Constraints and mechanisms in long-distance dependency formation. Doctoral Dissertation, University of Maryland, College Park, Md.